



**Scholars
Program**



UNIVERSITE D'ABOMEY-CALAVI

Final report

Opportunities for innovative agribusiness establishment along major
Agricultural Value Chains in Benin's Agricultural Development Poles



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Responsibility for the interpretation and use of this publication rests with the reader. In any case, the Foundation of Abomey-Calavi University cannot be held responsible for damages suffered as a result of its interpretation and use.

The overall objective of this study was to build a technical and economic data base on agribusiness opportunities in the major Agricultural Value Chains (AVC) of the seven Agricultural Development Poles (ADP), as set in the Government's Agricultural Program. Specifically, it was to (i) determine the strengths, weaknesses, opportunities and threats of each major AVC; (ii) conduct a comprehensive literature review and critical analysis of agribusiness establishment's opportunities in the major AVCs for young graduates; (iii) conduct a techno-economic analysis of agribusiness opportunities for young graduates along the major agricultural value chains; and (iv) propose approaches (package of support services) for integrating young graduates into major AVCs. As regarding the methodology, the mission adopted a participatory approach that emphasizes accelerated participatory research methods. At the operational level, eight major complementary steps were followed: (i) methodological framing session, (ii) literature review and secondary data collection; (iii) data collection tools development; (iv) field data collection; (v) data analysis; (vi) mid-term feedback; (vii) report writing; and (viii) restitution and finalization of the mission report. From the analyzes carried out, the following conclusions emerge.

- Three types of sectors have been defined, regarding their potential to provide innovative agribusiness opportunities. These include sectors with: (i) high potential, (ii) medium potential and (iii) low potential. Then, AVC were prioritized to keep the most promising chains (two or three) in terms of innovative agribusiness opportunities. The chains prioritization has been done by sector and by ADP. This would facilitate the orientation of youths on relevant agribusiness opportunities. Their success in the business will, however, depend on the originality of the business idea, their degree of motivation to carry the business, and the facilities and opportunities that characterize the business environment.

- The SWOT analysis of the major AVCs revealed that they have a lot of potential despite their weaknesses. One of the common opportunities for these AVCs is their sectors consideration in national agricultural policy. This would facilitate the technical and financial support for young graduates wishing to join these AVCs. It has been also realized that, finding solutions to internal or external faced constraints represent an important way of establishing innovative agribusiness in AVCs for youths. However, the performance of these AVCs face several obstacles. Access to adequate financing remain the most important of these obstacles.

- Many initiatives for youths' professional integration especially in the agribusiness were taken in Benin during this last decade but the results remain unsatisfactory. In 2015, nearly 30 institutions and government agencies were involved in youths' employment and entrepreneurship programs in Benin. Among the causes of the unsatisfactory results obtained by these institutions and agencies despite the resources invested, we can mention: the lack of synergy between the various initiatives, the lack of involvement of local authorities in the development of youths' integration programs, the lack of partnership between these programs and the private actors.

- This study identified 26 innovative agribusiness opportunities ranked by AVC and ADP. These opportunities fall in all sectors of activity (primary, secondary and tertiary). They find their innovative nature either in the: (i) processes of production or manufacturing, (ii) valorization of research results, (iii) valorization of processing residues, (iv) form presentation of a product or service, (v) coverage of a specific need translated by a strong demand, or in the (vi) novelty of a product / service at local or regional level. But the successful implementation of these opportunities

by youth requires advanced technical and economic analyzes that shed light on the measures to be taken in terms of basic technical skills, capacity building, investments, profitability, etc.

- From a technical point of view, the realization of the agribusiness opportunities identified requires a minimum university level of BAC + 3 (License) with capacity building needs in line with the activity and the field of intervention. It would be more interesting for a group of young graduates with varied background and skills to work together to implement one of these opportunities. Initial investments are generally lower for primary and tertiary sector opportunities than for processing and marketing activities (secondary sector). The same is true for the return on investment, which is relatively longer for secondary sector opportunities. In any case, youths wishing to grab identified agribusiness opportunities will need adequate technical and financial support.
- Six packages of service have been proposed to facilitate the insertion and success of young graduates in AVCs. These service packages include (i) test and validation of agribusiness ideas; (ii) evaluation of agribusiness projects; (iii) training and capacity building for agribusiness project developers; (iv) financing of agribusiness projects; (v) formalization of agribusiness and (vi) mentoring of young agribusiness entrepreneurs.

Executive summary	iii
Content	v
Tables list	vi
Figures list	vii
Boxes list	vii
Abbreviations list	viii
1. Introduction	1
2. Research method.....	2
3. Sectors and agricultural values chains diagnosis	8
3.1. Overview on agricultural sectors in Benin and by ADP	8
3.1.1. Overview on agricultural value chains in Benin	8
3.1.2. Overview of the different sectors by ADP	10
3.2. Typology of sectors and VC	11
3.3. Characterization of major sectors and AVCs	12
3.3.1. Soy	12
3.3.2. Rice	14
3.3.3. Meat and small livestock	17
3.3.4. Market garden products	19
3.3.5. Cassava	22
3.3.6. Aquaculture	23
3.3.7. Pineapple	25
3.4. Agricultural value chains environment analysis	27
3.4.1. Operational environment of agricultural value chains	28
3.4.2. Support Environment for Agricultural Value Chains	30
3.4.3. Facilitation environment for agricultural value chains	32
3.5. Constraints and strengths of major value chains and AVCs	34
3.5.1. Analysis of constraints in major value chains and AVCs	35
3.5.2. Analysis of assets in major value chains and AVCs	37
3.6. Market trends analysis	39
3.6.1. Analysis of current markets, potential markets and niche market	39
3.6.2. Trade constraints for young graduate agribusiness	43
3.6.3. Other Aspects Affecting the Performance of AVCS	44
3.7. Analysis of Past Experiences in Youth Farm Business Creation	44
4. Agribusiness opportunities critical analysis.....	48
4.1. Innovative business opportunities in the agricultural sector	48
4.2. Major value chains specific opportunities.....	49
4.2.1. Business Opportunities on White Rice for the local market value chain	49
4.2.2. Business Opportunities on tomato and traditional leafy vegetable value chains	49
4.2.3. Business opportunities on meat value chains (ruminants and poultry)	50
4.2.4. Business opportunities on soybeans, mustard and soy yoghurt value chains.....	50
4.2.5. Business opportunities on cassava flour and lafoun flour value chains	51
4.2.6. Business opportunities in the value chain of organic pineapple	52
4.2.7. Business opportunities in the value chains of clarias, tilapia and shrimps	52
4.3. Cross-sectoral opportunities.....	53
4.3.1. Training and coaching of farmers	53
4.3.2. Mobile Phytosanitary Service "Mobile Clinic" for plants and mobile veterinary services for animals.....	53
4.3.3. Repackaging and marketing of agricultural inputs (fertilizer) in small volume packages	54

4.3.4. Home delivery service for agricultural and agri-food products	54
4.3.5. Agribusiness brokerage	54
4.4. Youths' vision on agricultural entrepreneurship	56
4.4.1. Different categories of studied youths	56
4.4.2. Agribusiness success conditions and constraints for youths	57
4.5. Techno-economic analysis of agribusiness opportunities for youths along agricultural AVCs	58
4.5.1. Stabilized aklui production from broken white rice	58
4.5.2. Establishment of a seed production farm for market garden	59
4.5.3. Production of mixed-breed kids	61
4.5.4. Production of castrated chicks (capon)	62
4.5.5. Production and marketing of soybean seeds	64
4.5.6. Production of cassava-based bread flour	64
4.5.7. Stabilized lafoun production using a microbial starter for Nigerian market	67
4.5.8. Production of quality pineapple planting material	68
4.5.9. Aquaculture Engineering	70
4.5.10. Production of maggots	71
4.5.11. Freshwater shrimp production	72
4.5.12. Plant Clinic	73
4.5.13. Repackaging and marketing of agricultural inputs in small volume packages	74
5. Approach for young graduate integration in major a AVC	77
5.1. Test and Validation Service for Business Ideas in Agribusiness	77
5.2. Evaluation of agribusiness Start Up projects	78
5.3. Personality Test Service for Young Entrepreneur	78
5.4. Training and Capacity Building Service	79
5.5. Financing service for agribusiness projects	80
5.6. Formalization service for agribusiness companies and installation assistance	81
5.7. Mentoring service for young farmers	82
6. Conclusion and recommendation	84
References	86
Appendix	90
Appendix 1. Mission's Terms of Reference	90
Appendix 2. Details of the study methodology	95
Appendix 3. Details of Financial Calculations for Business Opportunities Analyzed	105

Tables list

Table 1. Evolution of different plant, animal and fish production between 2008 and 2016	8
Table 2. Objectives of the GAP sectors and sub-sectors	9
Table 3. Predominant sectors by pole of agricultural development	10
Table 4. Spatial coverage of the sectors targeted by the flagship projects of the GAP	10
Table 5. Highly promising sectors of innovative agribusiness opportunities by ADP	11
Table 6. Major AVC by sector and ADP	12
Table 7. Description of AVC for the sub-sector "white meat"	18
Table 8. Main marketable products / Finals by market gardening	21
Table 9. Importance of the pineapple industry in Benin	25
Table 10. Summary of the strengths, weaknesses, opportunities and threats of the different major AVCs	34
Table 11. Summary on current markets, potential markets and niche market for different AVCs	39
Table 12. Beninese, sub regional and international institutions for private sector financing and support	46
Table 13. List of some equipment available on the Beninese market for the agricultural transformation of rice	52
Table 14. Youth categories and their agribusiness visions	56
Table 15. Criteria for selection of the sectors at the level of each subsector (PV, PA, P fisheries)	101

Table 16. Criteria for choosing AVC by ADP	102
Table 17. Operating account of a castrated chick production enterprise	105
Table 18. Depreciation of buildings, installations, equipment and tools production of capon	105
Table 19. Operating account of a mixed-breed youngster production enterprise	106
Table 20. Amortization of mixed-race buildings, equipment, materials and tools	106
Table 21. Operating account of a market gardening seed production business	107
Table 22. Depreciation of buildings, plant, equipment and tools of market gardening seeds	107
Table 23. Operating account of a company producing certified soybean seed.....	107
Table 24. Depreciation of buildings, installations, equipment and tools certified seeds of soya	108
Table 25. Operating Account of a Plant Clinic.....	108
Table 26. Depreciation of Buildings, Facilities, Equipment and Tools Plant Clinic	109
Table 27. Operating Account of an Aquaculture Engineering Company	109
Table 28. Amortization of Buildings, Facilities, Equipment and Tools Aquaculture Engineering	110
Table 29. Operating Account of a Farm Reconditioning and Marketing Business	110
Table 30. Depreciation of buildings, facilities, equipment and tools for repackaging and marketing of agricultural	111
Table 31. Operating account of a stabilized aklui production plant based on broken white rice.....	111
Table 32. Depreciation of buildings, plant, equipment and machinery for the production of stabilized Aklui	112
Table 33. Operating account of a cassava-based bread flour production enterprise	112
Table 34. Depreciation of buildings, facilities, equipment and tools for the production of cassava-based bread	113
Table 35. Operating account of a stabilized Lafoun production company	113
Table 36. Depreciation of buildings, installations, equipment and tools Lafoun production stabilized	113
Table 37. Operating Account of an Organic Pineapple Release Business.....	114

Figures list

Figure 1: Steps in the methodology	4
Figure 2. Evolution of soybean production in Benin from 2006 to 2015	13
Figure 3. Soy sector mapping and its main AVCs.....	14
Figure 4. Evolution of rice production in Benin from 2006 to 2015	15
Figure 5. Rice sector mapping with its main value chains	16
Figure 6. Evolution de la production de viande au Bénin de 2006 à 2013	17
Figure 7. Cattle, goats, sheep, and meat value chain mapping	18
Figure 8. Evolution of the production of some vegetable crops in Benin from 2006 to 2015.....	20
Figure 9. Share of different vegetable crops in the national vegetable production in Benin in 2015	21
Figure 10. Evolution de la production de cassava au Bénin de 2006 à 2015.....	22
Figure 11. Clarias fish value chain mapping	24
Figure 12. Evolution of pineapple production in Benin from 2006 to 2015.....	25
Figure 13. Pineapple Value Chains mapping	26
Figure 14. System of agricultural value chains	28
Figure 15. Mission Log Flow Chart	98
Figure 16. Matrix for analyzing the strengths, weaknesses, opportunities and threats of value chains	103

Boxes list

Box 1: Technical analysis of a stabilized aklui production unit based on broken rice	58
Box 2: Economic analysis of a stabilized aklui production unit based on broken rice	59
Box 3: Technical Analysis of a Market Garden Seed Farm	60
Box 4: Economic Analysis of a Market Garden Seed Farm	60
Box 5: Technical and Economic Analysis of a mixed-breed kids' production	61
Technical analysis	61
Box 6: Technical analysis of a castrated chick production farm	63
Box 7: Economic analysis of a castrated chick production farm	63
Box 8: Technical analysis of a soybean seed production and marketing unit	64

Box 9: Economic Analysis Production and marketing of soybean seeds	65
Box 10: Technical analysis of a cassava flour production unit	66
Box 11: Economic analysis of a cassava flour production unit	66
Box 12: Technical analysis of a stabilized Lafoun production unit.....	67
Box 13: Economic analysis Technical analysis of a stabilized Lafoun production unit.....	68
Box 15: Economic Analysis of a Production Unit of Organic Pineapple planting material	69
Box 14: Technical analysis of a biological pineapple planting material production unit	69
Box 16: Technical Analysis for an Aquaculture Engineering Company	70
Box 17: Economic Analysis for Aquaculture Engineering.....	71
Box 18: Technical analysis for a maggot and earthworm production unit	72
Box 19: Technical Analysis for a Freshwater Shrimp Farm.....	72
Box 20: Technical Analysis of a Plant Clinic.....	73
Box 21: Economic Analysis of a Plant Clinic	74
Box 22: Technical Analysis of a Farm Reconditioning Firm	75
Box 23: Economic Analysis of a Farm Reconditioning Firm.....	75

Abbreviations list

ABOUCOP	: Butchers Association of Cotonou and Porto Novo
ACED	: Action Center for the Environment and Sustainable Development
ADMA	: Agricultural Mechanization Development Agency
AFAS	: Action of Solidarity African Women in for Development
AFD	: French Development Agency
AGOA	: African Growth and Opportunity Act
AGRITEC	: Agriculture and Appropriate Technology
AKB	: Benin Shea Actors Association
APIEX	: Investment and Imports Promotion Agency
ANAFE	: National Association of Women Farmers Operators
ANAR-P	: National Association of Pork Resellers
ANAT-P	: National Association of Pork Caterers
ANEP	: National Association of Pig Breeders
ANOPER	: National Association of Professional Organization of Ruminant Breeders
APIEX	: Investment and Imports Promotion Agency
ASBD	: Sino-Beninese Development Association
ATCMB	: Workshop of Metallic Manufacturers Technicians of Benin
ATDA	: Territorial Agency for Agricultural Development
BECCRREMA	: Office of Study, Design, Manufacturing in Agricultural Machinery
CAFROP	: Cooperative for improving the rice sector of Ouémé-Plateau
CAIA	: Central Purchasing of Agricultural Inputs
CAMEMEC	: Construction Adjustment Metal Carpentry and Closure
CECODI	: International Center for Integrated Ecodevelopment
CECURI	: Cuniculture Research and Information Center
CEV	: Study and Validation Committee for Agribusiness Projects
ECOWAS	: Economic Community of West African States
CEFACOM	: Manufacturing, Adjustment Center of Metal Construction
CLCAM	: Agricultural micro finance agency
COBEMAG	: Benin Agricultural Equipment Cooperative
CRIAB	: Aquaculture Research and Incubation Center of Benin
CRR-MC	: Regional Council of Rice farmers of Mono and Couffo
CRTA	: Agricultural Technology Research Center
CSFT	: Drying Center for Tropical Fruits
CSMA	: Agricultural Machinery Services Center
CTB	: Belgian Technical Cooperation

CTMC	: Technical Center of Masonry and Tiling
VC	: Value Chain
AVC	: Agricultural Values Chain of
DDAEP	: Departmental Directorate of Agriculture, Livestock and Fisheries
DE	: Livestock Directorate
DEDRAS	: Organization for Sustainable Development, Strengthening and Self-promotion of Structures
ECOWAP	: Regional Agricultural Policy of West Africa
ESOP	: Service Company and Producer Organization
FA	: Faculty of Agronomy
FAO	: Food and Agriculture Organization of the United Nations
FENAPECHE	: National Federation of Fishermen
FENBOC	: National Federation of Butchers and Charcutiers
FFOM	: Strengths, Weaknesses, Opportunities and Threats
FIDA	: International Fund for Agricultural Development
FSA	: Faculty of Agricultural Sciences
FUPRO	: Federation of Producers Unions
GFMA	: Agricultural Machinery Manufacturing Group
GIZ	: German Technical Cooperation
GUFE	: Single Window of Formalization of Enterprises
HVA	: High Added Value
ICRA	: International Center for Development Oriented Research in Agriculture
IFDC	: International Fertilizer Development Center
IITA	: International Institute of Tropical Agriculture
INRAB	: National Institute of Agricultural Research in Benin
INSAE	: National Institute of Statistics and Economic Analysis of Benin
JOLISAA	: Joint Learning in Innovation Systems in African Agriculture
MAEP	: Ministry of Agriculture, Livestock and Fisheries
kg	: Kilogram
NAFDAC	: National Agency for Food and Drug Administration and Control
ONG	: Non-Governmental Organization
OPA	: Farmers' Peasant Organization
OSD	: Strategic Directions for Development
PADA	: Support Program for Agricultural Diversification
PAFILAV	: Support Project for Sectors Milk and Meat
GAP	: Government Action Program
PAIA-VO	: Agricultural Infrastructure Support Project in the Ouémé Valley
PASAIA	: Support project for food security through food intensification
ADP	: Agricultural Development Poles
ADPC	: Agricultural Development Project of the Communes of Benin
ADP-VV	: Agricultural diversification program through valleys valorization
PNIASAN	: National Plan for Agricultural Investments and Food and Nutrition Security
PNOPPA	: National Platform of Farmers Organizations and Agricultural Producers
PPAAO	: Accelerated Productivity Project in West Africa
PPCB	: Contagious Bovine Contamination Poison
PPMA	: Agricultural Mechanization Promotion Project
PPP	: Private public partnership
PSDSA	: Strategic Plan for Agricultural Sector Development
PSRSA	: Strategic Plan for the Revival of the Agricultural Sector
PSRSA	: Strategic Plan for the Revival of the Agricultural Sector
PTAA	: Agricultural and Food Technology Program
PTF	: Technical and Financial Partners
PUASA	: Emergency Food Security Support Project
RCDE	: Empowering Jobseekers

SDI	: Intercontinental Distribution Company
SEPO	: Success, Chess, Potentialities, Obstacles
SNV	: Dutch Development Service
SODECO	: Society for the Development of Cotton
SONAPRA	: National Society for Agricultural Promotion
TIC	: Information and Communication Technology
t	: Tons
UAC	: University of Abomey-Calavi
UEMOA	: West African Economic and Monetary Union
UNA	: National University of Agriculture
UNPS	: National Soy Producer Union
URFMAN	: Niaouli Research and Training Unit for Agricultural Mechanization
URPA	: Regional Union of Cashew Producers
VVV	: Village Poultry Vaccinators

1

INTRODUCTION



1. Introduction

Benin's economy is essentially based on agricultural sector. This sector employs and provides direct income to more than 70% of the labor force and contributes about 25% to the formation of the gross domestic product (World Bank, 2017) and 70 to 85% to the export earnings (FAO, 2012). In this context, agriculture appears as a sector of interest that can offer development opportunities. This is why the Government, through its Government Action Program (GAP), wants to make the agricultural sector the main pedal for economic development, wealth creation and jobs in Benin (Benin revealed, 2016). To achieve this, the Ministry of Agriculture, Livestock and Fisheries (MAEP) has, since the beginning of the 2000s, chosen the promotion of the sectors with the value chain (VC) as an operational approach. The objective of the VC approach is to add economic value to local products by increasing their quality, improving post-harvest technologies, optimizing the organization and performance of the chain and the quality of their products. The promotion of value chains, with the VC approach as an operational approach, will be carried out through seven (7) Agricultural Development Poles (ADP). The concern is to better channel efforts in the agricultural sector and maximize the exploitation of agroecological potential and local know-how. The development of different value chains has a dual economic and social advantage. In economic terms, it appears to be an important instrument for linking agricultural promotion to economic growth. In this sense, it opens up a range of investment and wealth creation opportunities to catalyze the national economy. At the social level, the development of agricultural value chains promotes the eradication of poverty through the equitable distribution of income between direct actors of AVCs and the inclusion of the poor. This is also an opportunity for job creation that can be used for the integration of youths who represent nearly 33% of the national population (INSAE, 2016). The experiences of youths in Benin's agriculture highlight a set of limiting factors related on the one hand to the business environment in agricultural sector (difficulties of access to credit, equipment, land, inputs) and on the other hand to the intrinsic capacities of youths (knowledge, specific skills) to undertake sustainable agribusiness (ACED, 2017). However, the agricultural sector is full of assets for the emergence and development of more efficient companies and enormous potential for the country's economy growth (PSDSA / PNIASAN, 2017). In the agricultural sector, small-scale processing and AVCs have been identified as having high potential for entrepreneurship opportunities (UNCDF, 2015). Indeed, there are many opportunities along agricultural value chains on which youths could position themselves (ACED, 2017).

Therefore, the central question remains: how to help youths to take advantage of the potential of AVCs in order to reduce unemployment and create wealth? Accompanying youth to grasp the various opportunities offered along the AVCs in a sustainable manner first of all requires the identification of these agribusiness opportunities in the various major AVCs. Then, it will provide youths with reliable information on the opportunities in terms of techniques and means required to value them.

This allows university graduate to maximize their profits while providing lasting solutions to community problems. In addition, technical support and the creation of a favorable environment for access to production factors and market are essential. It is in this perspective that the

University of Abomey-Calavi (UAC) through the funding of the Mastercard Foundation initiated the study on the Opportunities for innovative agribusiness establishment along major Agricultural Value Chains in Benin's Agricultural Development Pole. The overall objective of this study was to build a technical and economic data base on agribusiness opportunities in the major Agricultural Value Chains (AVC) of the seven Agricultural Development Poles (ADP), as set in the Government's Agricultural Program. Specifically, it was to (see appendix 1):

- determine the strengths, weaknesses, opportunities and threats of each major AVC;
- conduct a comprehensive literature review and critical analysis of agribusiness establishment's opportunities in the major AVCs for young graduates;
- conduct a techno-economic analysis of agribusiness opportunities for young graduates along the major agricultural value chains; and
- propose approaches (package of support services) for integrating young graduates into major AVCs.

This initiative is in line with the vision of ECOWAP (West Africa Regional Agricultural Policy), which focuses in particular on the promotion of agricultural enterprises through the involvement of the productive and competitive private sector in the intra-community markets and the international markets. It makes it possible to meet the ambition of the Strategic Plan for the Development of the Agricultural Sector (PSDSA) which promotes, among other things, the creation of agricultural and agri-food enterprises integrated in the AVCs (inclusive), to improve the level of processing of agricultural products and give them more added value (PSDSA / PNIASAN, 2017). To this end, the GAP plans to install 2,500 young agricultural entrepreneurs in the next five years.

2

RESEARCH METHOD



2. Research method

The methodological details for implementing the mission are presented in the appendix 2 of this report. In practice, eight major complementary steps were followed: (i) methodological framing session, (ii) literature review and secondary data collection; (iii) data collection tools development; (iv) field data collection; (v) data analysis; (vi) mid-term feedback; (vii) report writing; and (viii) restitution and finalization of the mission report. From the analyzes carried out, the following conclusions emerge.

The detailed methodology of this mission is in appendix 2.

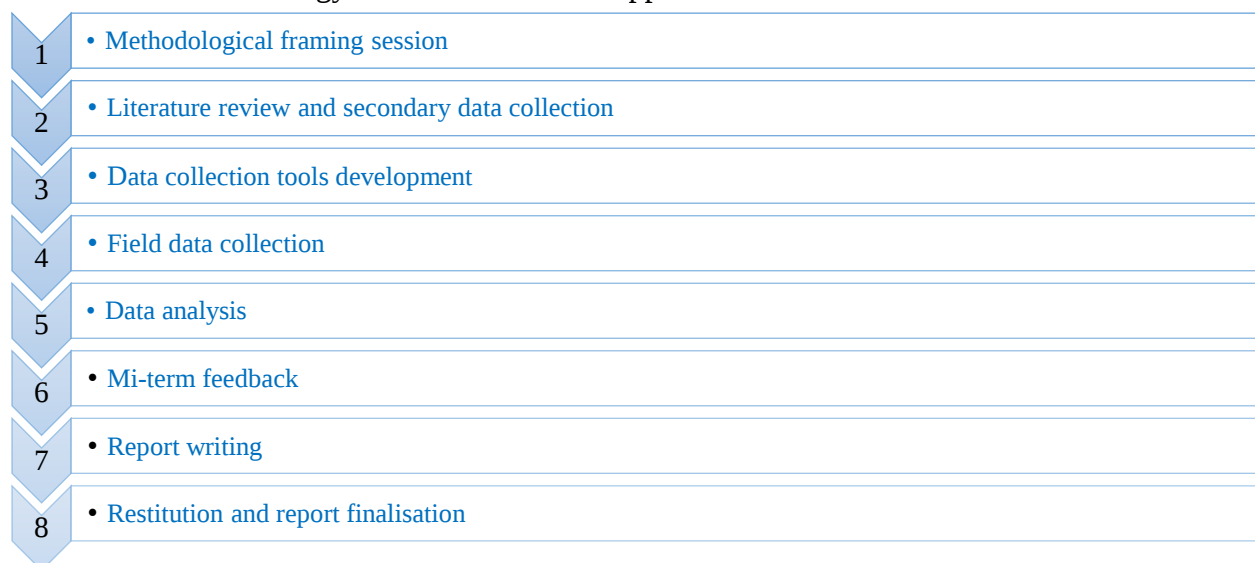


Figure. 1: Steps in the methodology

Methodological framing session

This session allowed the consultant and the sponsor to agree on the practical methods of communication and to remove any points of divergence. The comments and other suggestions of the participants were taken into account for the rest of the mission.

Literature review and secondary data collection,

The review of the literature summarized the secondary data available on agricultural sectors, AVCs, job opportunities, trade nomenclature, strengths, weaknesses, opportunities and threats (SWOT), etc. It allowed to have a global view of the different sectors and AVC.

Data collection tools development

Two types of tools have been developed for this mission, namely, interview guides and survey guides. Survey workshops are types of focus groups bringing together actors from diverse backgrounds and operating mostly in value chains.

Field data collection

Data collection was done in all Agricultural Development Poles (ADPs) using qualitative methods and quantitative methods. Three (03) survey workshops were conducted: one in Parakou for the Benin northern part's ADPs, else one in Bohicon for the central part's ADPs

and a last one in Cotonou for ADPs in South Benin. The process followed for these workshops was participatory and inclusive in the form of group work. The key points covered during these workshops include: brainstorming for the listing of the sectors, prioritization of the sectors according to criteria set by consensus, exhaustive point of AVC by sector, and identification of opportunities for youths by AVC. The study sample is made up of youths (young graduates, youths waiting for graduation, youths incubated at the UAC Foundation and young entrepreneurs), researchers, and actors operating at various levels of AVCs and agricultural sectors. They are mainly macro actors (actors and structures intervening at national level), middle actors (actors and structures intervening at regional level, department, ADP, support structures for AVCs) and micro actors (direct actors of AVCs, business promoters etc.).

Data analysis

At the end of the field phase, the collected data were analyzed.

- ***Typological analysis / prioritization based on selection criteria for the sectors and AVCs***

In order to retain major value chains, a simple typological analysis of sectors and AVCs was performed using a number of criteria. These criteria were identified through literature review and during the various survey workshops conducted as part of this mission. Criteria used for classifying sectors include: (i) the evolution of the average annual production between 2008 and 2016, (ii) the actors' sector prioritization following ADP and the PSDSA's sector prioritization, (iii) the diversity of VCs in the sector, (iv) the favorable business environment for the sector, (v) the level of actors' organization in the sector, (vi) the availability of literature to help carry out cross-criteria analyzes. Criteria (i), (ii) and (v) indicate the potential for economic growth of the value chains, while criteria (iii) and (iv) reflect the potential opportunity of agribusiness in the sector. With regard to AVCs, nine criteria were used. Criteria 1, 2 and 5 indicate the potential for economic growth of the AVC, criteria 3, 8 and 9 express the success likeliness of business, and 4, 7 and 6 relate to the potential for creating new innovative businesses. Based on these different criteria, an AVC prioritization index was calculated and used to select a number of major AVCs per ADP. In-depth analyzes of innovative business opportunities focused on these major AVCs.

- ***SWOT analysis***

The SWOT analysis was done primarily for the major AVCs selected. The SWOT is usually represented as a 2×2 matrix consisting of four parts, the first of which focuses on forces, namely on internal resources or resources depending on the capacity of the value chains that are useful for creating innovative businesses. The second part relates to the weaknesses that correspond to the limitation or a default of the AVC and which are harmful for the creation of innovative companies. In the third part of the table, we find the opportunities, showing the external conditions or any other favorable situation in the environment of the AVC and which are useful for the creation of innovative companies. Finally, in the fourth part, we include the threats, expressing any adverse situation in the AVC environment that will or could prevent the creation of innovative companies.

- ***Technical and economic analysis of innovative business opportunities***

On a technical level, the document essentially provides elements that enable young future entrepreneurs to not only make decisions but also better develop their business plans. Economic analyzes focused on the calculation of costs, value added and cash flow. The information

available in the literature has also been used in the techno-economic analysis. Finally, a SEPO analysis (Success, Failures, Potentialities and Obstacles) was conducted to identify the different opportunities for creating innovative companies.

Restitution and report finalization in three steps including:

- Mid-term feedback
- Writing of the report
- Restitution and finalization of the report.

3

DIAGNOSIS OF AGRICULTURE SECTORS AND VALUES CHAINS



3. Diagnosis of agriculture Sectors and values chains

3.1. Overview on agricultural sectors in Benin and by ADP

3.1.1. Overview on agricultural value chains in Benin

Since the beginning of the 2000s, Benin's agricultural policy has opted for the promotion of value chains as an approach to agricultural development. To this end, 13 sectors had been selected as priorities, particularly in the Strategic Plan for the Revival of the Agricultural Sector (PSRSA) (see Table 1). These sectors should benefit from the attention of investors and Technical and Financial Partners (TFP). Target values had been defined in terms of production and productivity for these so-called major sectors. In some of these sectors, production has increased appreciably: maize (*Zea mays*), rice (*Oryza sativa*), cashew (*western Anacardium*), etc. However, stagnation or even regression happened in others (cassava (*Manihot esculenta*) and palm oil (*Elaeis guineensis*)). Thus, we distinguish between the sectors for which production has increased and the objectives of the PSRSA have been reached (cashew nut and market gardening), the sectors whose production has known an increase, but not enough, to achieve the objectives of the PSRSA (pineapple (*Pineapple comosus*), rice, yam (*Dioscorea alata*), maize and cotton (*Gossypium* sp.), and the sectors for which production has declined relative to the 2008 reference (cassava and oil palm) (see PSDSA, 2017).

Table 1. Evolution of different plant, animal and fish production between 2008 and 2016

Speculations	Situation in 2008 (tons)	Targets 2015 (tons)	Achievements in 2015 (tons)	Rate of increase compared to reference (%)	Achievement rate against 2015 target (%)
Vegetal sector					
Corn	978 063	1 900 000	1 286 060	31	67,69
Rice	109 871	395 000	204 310	86	51,72
Cassava	3 611 213	8 500 000	3 420 665	-5	40,24
Vegetable crops	325 519	400 000	633 862	95	158,47
Cotton	210 604	600 000	269 173	28	44,86
Oil palm tree	319 500	505 000	32 943	-89,69	6,52
Yam	1 450 000	3 500 000	2 650 498	82,79	75,73
Pineapple	134 966	600 000	244 207	81	40,7
Cashew	99 000	120 000	225 230	128	187,69
Animal sectors					
Meat	56 348	92 000	68 492	21,55	74,45
Milk	91 631	155 000	112 958	23,27	72,88
eggs	9 072	24 000	14 746	62,54	61,44
Halieutic dies					
Pisces	37 495	50 000	45 281	20,77	90,56
shrimps	700	900	NA	NA	NA

NA= Non available

Source : PSDSA, 2017

In addition to so-called major sectors, other sectors that were previously negligible have made significant progress. This is the case, for example, of soya, shea and yam, which today make a significant contribution to the growth of the national economy (PSDSA, 2017). These sectors have emerged not only because of the enthusiasm of producers and their organizations, but especially because of the existence of a market and the support of various TFPs and NGOs (Giz

and SOYGNON in particular). These sectors have become part of Benin's new agricultural policy as presented in the PSDSA.

Thus, the analysis of the agricultural sector allowed the State, in its new agricultural policy, to define the major sectors and production objectives over the period 2017-2021 (see Table 2). These sectors have been grouped into two main categories namely: (i) the agricultural sectors to benefit from massive investments in the framework of the Government Action Program (GAP 2017-2021), and (ii) the other sectors to be promoted. In the first category, we find:

- high value-added (HVA) sectors such as pineapple, cashew nuts and vegetable products;
- conventional sectors such as rice, maize and cassava. In fact, these are sectors that play a major role in food security;
- animal and fish industries, especially meat, eggs, milk and continental fish.

Under the GAP, five flagship projects, taking into account the ten massive investment sectors, will be implemented, namely (i) the inland aquaculture project, (ii) the project for the enhancement of the bass and average of the Ouémé Valley, (iii) the High Added Value chains HAV (pineapple, cashew nut, market gardening) project, (iv) the conventional sector (rice, maize, cassava) project and (v) the "meat, milk and table eggs" project ".

Table 2. Objectives of the GAP sectors and sub-sectors

Subsectors	Quantitative objectives to be achieved in 5 years
High value-added value chains	
Pineapple	Improve yields by 60 to 80 tonnes per ha and increase the level of export to 24 000 tonnes to the EU
cashew	To process locally at least 50% of raw nuts by 2021
Market garden products	Increase the production of market gardening crops by 25%
Conventional dies	
Rice	Increase the yield from 4 to 5 T per ha and improve the production of white rice to 385 000 T per year
Corn	Improve yield at 1.5T / ha and increase grain corn production to 1 800 000 T of grain corn by 2021
Cassava	Improve the yield at 20T / ha
Animal and fisheries sectors	
Meat	Improve meat production to 104 000 T
Milk	Increase cow's milk production to 172 000 T by 2021
Table eggs	Improve availability of table eggs to 25 000 tonnes of eggs by 2021
Continental fish farming	Produce about 20 000 T of fish in 5 years.

Source: PSDSA, 2017

The second major category of sector, that of the other major sectors to be promoted include: (i) vegetable and agroforestry sectors such as soybean, shea, palm oil, yams, sweet potatoes, legumes, legumes; citrus fruits, plantain, aromatic plants; (ii) non-conventional breeding systems such as rabbit, grasscutter or snail. Citrus fruits are a locomotive sector in the Zou and Couffo, the oil palm is for the Ouémé and the Plateau, the shea for the northern departments, the soybean in Zou-Collines, Borgou, Donga and Atacora.

3.1.2. Overview of the different sectors by ADP

Table 3 shows that several sectors are predominant in the different ADPs. Some of these sectors have been targeted by the government through flagship projects, given their importance at the national level. Cross analysis of the sectors between ADPs indicates that cotton is predominant in three ADPs while rice appears in six poles. Market gardening and small livestock are practically present in all ADPs.

Table 4 shows the spatial coverage of the sectors targeted by the flagship projects of the GAP. The analysis of this table shows that, in terms of key sectors, the Niger Valley (ADP1) is mainly concerned with rice, meat and vegetable products. Maize and livestock are targeted in ADP2 whereas in ADP3 maize, rice and meat are concerned. The ADP4 takes into account, in addition to the sectors targeted in the ADP3, the cassava sector. It is in the ADP7 that the number of sectors taken into account in the projects is relatively higher.

Table 3. Predominant sectors by pole of agricultural development

Poles of agricultural development	Zone type	Predominant sectors of the zone
ADP1. Niger Valley	Rice field of lowlands and lowlands	▪ Rice, market gardening (tomato, onion and potato),
ADP2. Alibori South-Borgou Nord and 2KP	Cotton basin area	▪ Cattle / goat / sheep / poultry breeding
ADP3. Atacora West	Cotton-food zone	▪ Cotton (locomotive culture), maize, sorghum and soybeans
ADP4. Borgou South-Donga-Collines	Cotton-food zone Cashew	▪ Intensive cattle breeding
ADP5. Zou-Couffo	Fruit growing area - food crops	▪ Livestock of sheep, goats and poultry
ADP6. Tray	Zone of oil palms - Food	▪ Cotton, rice, corn and mango
ADP7. Ouémé-Atlantic Mono	Fishery area - market gardening	▪ Aquaculture, pineapple, rice and market gardening (dominant activities) ▪ Corn, cassava and oil palm ▪ Small livestock

Source: GAP (2016-2021)

Table 4. Spatial coverage of the sectors targeted by the flagship projects of the GAP

Sectors		ADP1	ADP2	ADP3	ADP4	ADP5	ADP6	ADP7
High value-added value chains	Pineapple							X
	cashew				X			
	Market garden products	X						X
Conventional dies	Rice	X		X	X	X	X	X
	Corn		X	X	X	X	X	X
	Cassava				X		X	X
Animal and fish sectors	Continental Aquaculture (Fish)							X
	Meat (cattle, sheep, goat, poultry)	X	X	X	X	X		X
	Milk		X		X			
	Eggs		X		X	X		X

Source : GAP (2016-2021)

3.2. Typology of sectors and VC

The number of agricultural sectors in Benin is relatively high. Some of these sectors (cotton, rice, cashew, etc.) are taken into account in agricultural policy while others seem to be less considered (taro, sweet potato, etc.). Both the sectors considered in the national agricultural policy and those not specifically mentioned in this policy may be potential providers of innovative companies. This is why in the interviews conducted through the survey and other workshops, most agricultural sectors were considered in order to get the actors to identify the opportunities of innovative agribusiness that are hidden there. However, for reasons of in-depth analysis of the most relevant opportunities, a typology of agricultural sectors was made in the different ADPs taking into account the criteria listed in paragraph 2.3.1 and in the appendix 2. In total, three classes of sectors have been defined, regarding their potential to provide innovative agribusiness opportunities. These include sectors with: (i) high potential, (ii) medium potential and (iii) low potential. The details of the results are presented in Appendix 2, but Table 6 presents the highly promising sectors of innovative companies identified by ADP. The rest of the work is based on these sectors, namely soya, rice, small livestock, vegetable products, cassava, aquaculture and pineapple.

Table 5. Highly promising sectors of innovative agribusiness opportunities by ADP

ADP	Position in prioritization		
	1 st	2 nd	3 rd
ADP1 (Niger Valley)	Rice	Market garden products	Meat (goat, sheep, cattle, poultry)
ADP2 (South Alibori - North Borgou and 2KP)	Soy	Corn	Meat (goat, sheep, cattle, poultry)
ADP3 (Atacora West)	Soy	Corn	Rice
ADP4 (South Borgou, Donga and Collines)	Soy	Cashew	Small farms
ADP5 (Zou and Couffo)	Rice	Peanut	Small farms
ADP6 (Plateau)	Cassava	Rice	Small farms
ADP7 (Ouémé, Atlantic and Mono)	Market garden products	Rice	Aquaculture pineapple

In each of the six sectors thus selected, the identification of AVCs was made in a more or less exhaustive manner. Then, these AVCs were prioritized according to the criteria presented in appendix 2. At the end of this hierarchic classification, the most promising AVCs of innovative companies (two or three) were selected by sector and by ADP (see Table 6). This should facilitate the orientation of youths on relevant agribusiness opportunities. Their retention in the business, however, depends on the originality of the business idea, their degree of motivation for the business, and the facilities and opportunities that characterize the business environment.

Table 6. Major AVC by sector and ADP

ADP Sectors		Selected AVC		
ADP1 (Niger Valley)				
	Rice	Paddy rice	White rice	Parboiled rice
	Market garden products	Dried tomato	Dried pepper	Fruit tomato
	Meat (cattle, sheep, goat, poultry)	Fresh meat	Dried meat	Smoked meat
ADP2 (South Alibori - North Borgou and 2KP)				
	Soy	Grain soy	Soy cheese	Soy mustard
	Meat (cattle, sheep, goat, poultry)	Fresh meat	Dried meat	Smoked meat
ADP3 (West Atacora)				
	Soy	Grain soy	Soy mustard	Soy milk
	Rice	Parboiled rice	White rice	
ADP4 (South Borgou, Donga and Collines)				
	Soy	Grain soy	Soy mustard	Soy yogurt
	Small livestock	Traditional chicken	Guinea fowl	
ADP5 (Zou and Couffo)				
	Rice	White rice	Parboiled rice	
	Small livestock	Poultry	Rabbit	
ADP6 (Plateau)				
	Cassava	Breadmaking cassava flour	Lafoun	
	Rice	Parboiled rice	White rice	
	Small livestock	Traditional chicken	Rabbit	
ADP7 (Ouémé, Atlantic and Mono)				
	Market garden products	Tomato puree	Traditional leafy vegetables (Moringa, Tchiayo)	Fruit tomato
	Rice	Parboiled rice	White rice	
	Aquaculture	Clarias smoked / fresh	Fresh Tilapia	Shrimps
	Small livestock	Traditional chicken	Rabbit	
	Pineapple	Fresh pineapple international market	Organic pineapple	Pineapple juice

3.3. Characterization of major sectors and AVCs

This sub section analyzes the sectors identified as major, regarding innovative business establishment opportunities. These are namely: soybean, rice, small livestock, vegetable products, cassava, aquaculture and pineapple. It also gives a brief description of the AVCs identified as major in these sectors.

3.3.1. Soy

Soybean is a legume introduced more than four decades ago, but its production actually took during the 1990s when it increases 12.38 times, passing from 347 tons in 1990 to 4,296 tons in 2000 (Ogouvidé and Sodjinou, 2008). From 2000 to 2014, soybean production grew at an average rate of 35% per year and stood at 139,909 tonnes in 2015 (see Figure 2). This places the soy sector as the most dynamic among food chains and the first legume produced in Benin (Baris et al., 2016). It is increasingly positioned as a cash crop due in particular to its export. A

national strategy for the development of soybean in Benin is currently being developed. According to an estimate made by Baris et al. (2016), 30% of Benin's

soybeans would be exported as seeds, 15% would be locally transformed into oil and 55% for consumption from artisanal processing (milk, soy cheese, etc.). According to the same authors, 25% of the cakes from soy processing would be exported to Nigeria and the national demand for soybeans for the production of compound feed for livestock is not met. Seed supply is the main limitation to the expansion of soybean production. This can be

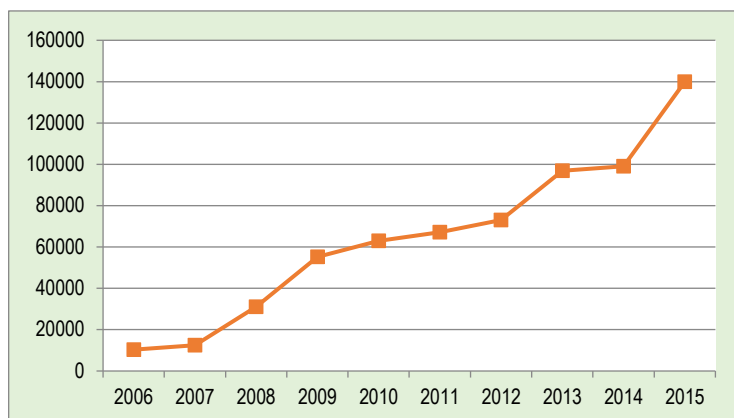


Figure 2. Evolution of soybean production in Benin from 2006 to 2015

Made from data available on <https://countrystat.org/home.aspx?c=BEN&tr=7> (22/11/2017)

explained by the fact that soybean seeds are not easy to conserve likewise those of other food crops. In fact, soybean seeds significantly lose their germinative supply when they are kept in a peasant environment, forcing producers to renew their seeds more frequently (Baris et al., 2016). A young person well trained in the production and conservation of seeds could therefore value this innovative business opportunity. Thus, the production of improved and certified soybeans should allow youths to gain a good market share, estimated at 6,000 tons per year. This should contribute to the improvement of soybean productivity as local soybean seeds are difficult to achieve a yield of one tonne per hectare while improved seeds are expected to reach 1.5 tonnes without further major intensification. of the technical itinerary (Baris et al., 2016). As proposed by Ayenan et al. (2017), a partnership between seed production units and inoculum production units (the FSA Microbial Ecology Laboratory, for example) would facilitate the sale of seeds. Indeed, the inoculum is successfully penetrating the market, but producers will only be able to benefit from its potential by combining its use with quality seeds.

Among the main AVCs in the soy sector (Figure 3), the three priorities are those of grain soy, soy mustard, soy milk and its derivatives (yogurt, cheese).

- ***The grain soybean value chain***

This AVC involves actors in the production links, and marketing. Production is mainly rain-fed. The actors are more or less organized with the support of the structures such as the German technical cooperation (GIZ), SOYGNON, the Federation of the Unions of the Producers of Benin (FUPRO), Organization for the Sustainable Development, the Reinforcement and the Self-promotion of the Structures (DEDRAS-NGO), the National Union of Soy Producers (UNPS), etc. These organizations support producers by facilitating access to seeds, inoculum and sometimes by putting them in contact with processors. Indeed, unlike corn and rice, soybeans have not yet benefited from government support for access to inputs. Producers are able to source seed and inoculum through support from non-governmental organizations and technical and financial partners. The use of certified seeds remains marginal, particularly

because of weak connections between seed producers and producers and the unavailability of basic seeds (Hinvi, 2016, Ayanan et al., 2017).

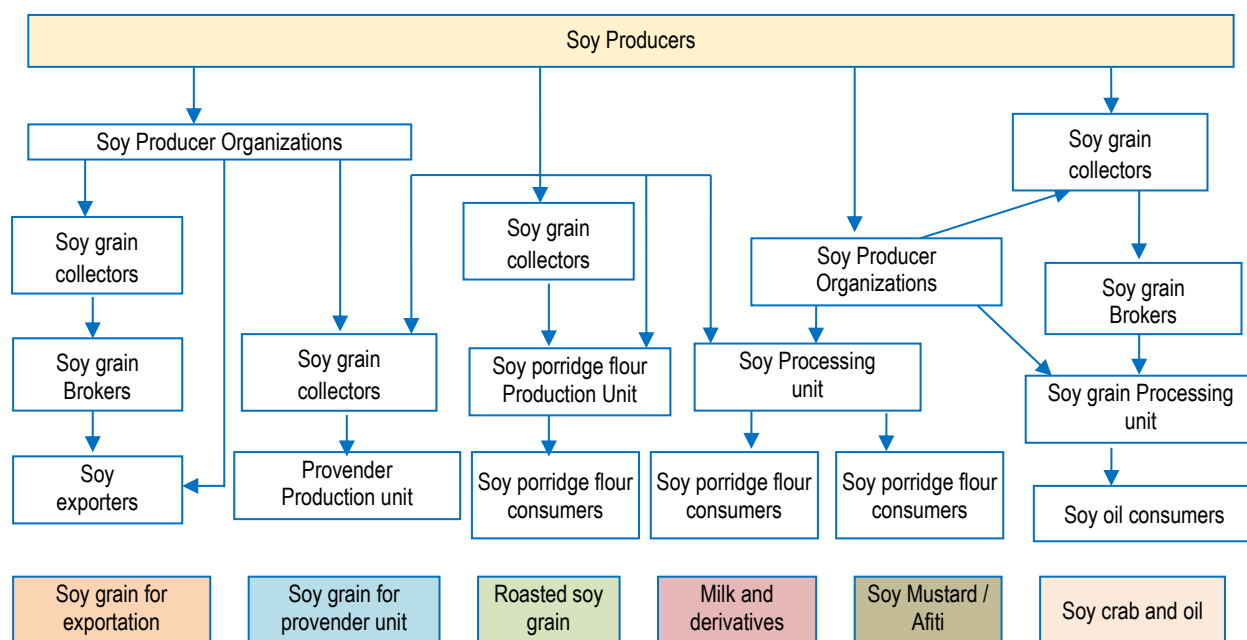


Figure 3. Soy sector mapping and its main AVCs

Source: Produced on the basis of the bibliographic review

- **Mustard value chain, milk and soy yogurt**

These AVCs involve only women who process soybean grain. The segments of these AVCs start with seed collection or supply followed by processing. Women obtain grain from producers or gathering markets. Soybean processing is exclusively practiced by small artisanal units run by women. These units remain constrained by the low performance of processing technologies and the low quality of products placed on the market. The best-known products that can be processed without heavy investment are milk, cheese and soy mustard. Through research and development projects, soybean milk production and stabilization technology has been developed (Agboton et al., 2017). These technologies and processes for obtaining these products are publicly available. These products, which are cheese, *dadonou* and soy milk offer enormous potential for agribusiness for young graduates of universities especially those who specialize in food technology. They will be able to create production units for these products to meet market demand.

3.3.2. Rice

In Benin, rice is the second most-consumed cereal after maize and the third most-produced cereal after maize and sorghum (CCR-B, 2011, ABEL, 2009). In 2010, national rice requirements were estimated at between 25 and 30 kg per inhabitant per year, or 235,500 to 279,000 tonnes per year (National Strategy for Rice Development-SNDR, 2011). Domestic production covers only 47% of the demand, which continues to grow per year. The difference between production and domestic demand is being filled by imports, which unfortunately are seriously competing with domestic production.

Given its importance in food and social issues, rice receives special attention at the political level. It has been selected as a major area for both PSRSA and PSDSA. Its production is made in virtually all ADPs. Its performance, after increasing between 2008 and 2011 as a result of the government's response to the 2008 food crisis, declined from 3,924 kg / ha in 2011 to 3,129 kg / ha in 2015 (PSDSA 2017). Production nearly tripled between 2006 and 2015, from 72,432 tonnes to 204,310 tonnes (Figure 4). This increase in production is largely due to the expansion of the areas planted.

Two main AVCs exist in the rice sector, namely AVC "parboiled rice" and AVC "white rice" (see Figure 5). In

both AVCs, the production link remains the best organized from the village level to the national level.

- **White rice value chain**

The AVC *white rice* mainly involves direct actors such as producers, shelling units, traders and consumers. The existence of processing units and rice mills is a strong point for this AVC. However, the quality of white rice still needs improvement because it still contains plant debris and blackheads. The fertilizers used are those intended for cotton or other crops. There is no mechanism for distributing inputs because of the inability of the actors to aggregate needs and the authorities or operators to really get involved in this link (Totin et al., 2012, Konnon et al., 2014). The production and use of certified seeds has increased since the 2008 food crisis.

The variety IR 841, known for its aroma, and the variety NERICA L20 have become predominant (Konnon et al., 2014). However, their use is not yet widespread and multipliers depend on projects and programs for the supply of basic seeds and the marketing of certified seeds. The variety IR 841 is appreciated by consumers for its fragrance but its basic seeds are not available for producers. Young graduates can complete the formalities and register as seed companies and take advantage of this opportunity to produce basic and certified seeds.

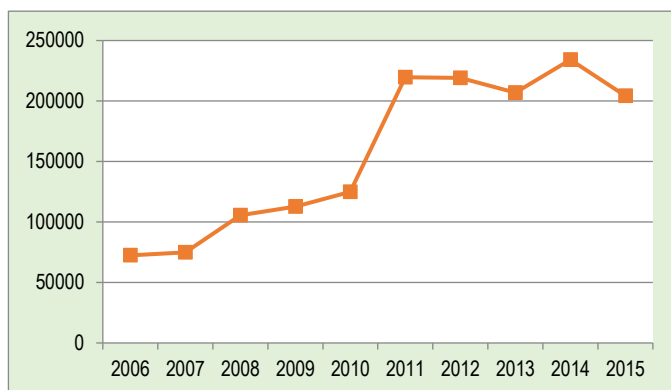


Figure 4. Evolution of rice production in Benin from 2006 to 2015

Made from data available on

<https://countrystat.org/home.aspx?c=BEN&tr=7> (22/11/2017)

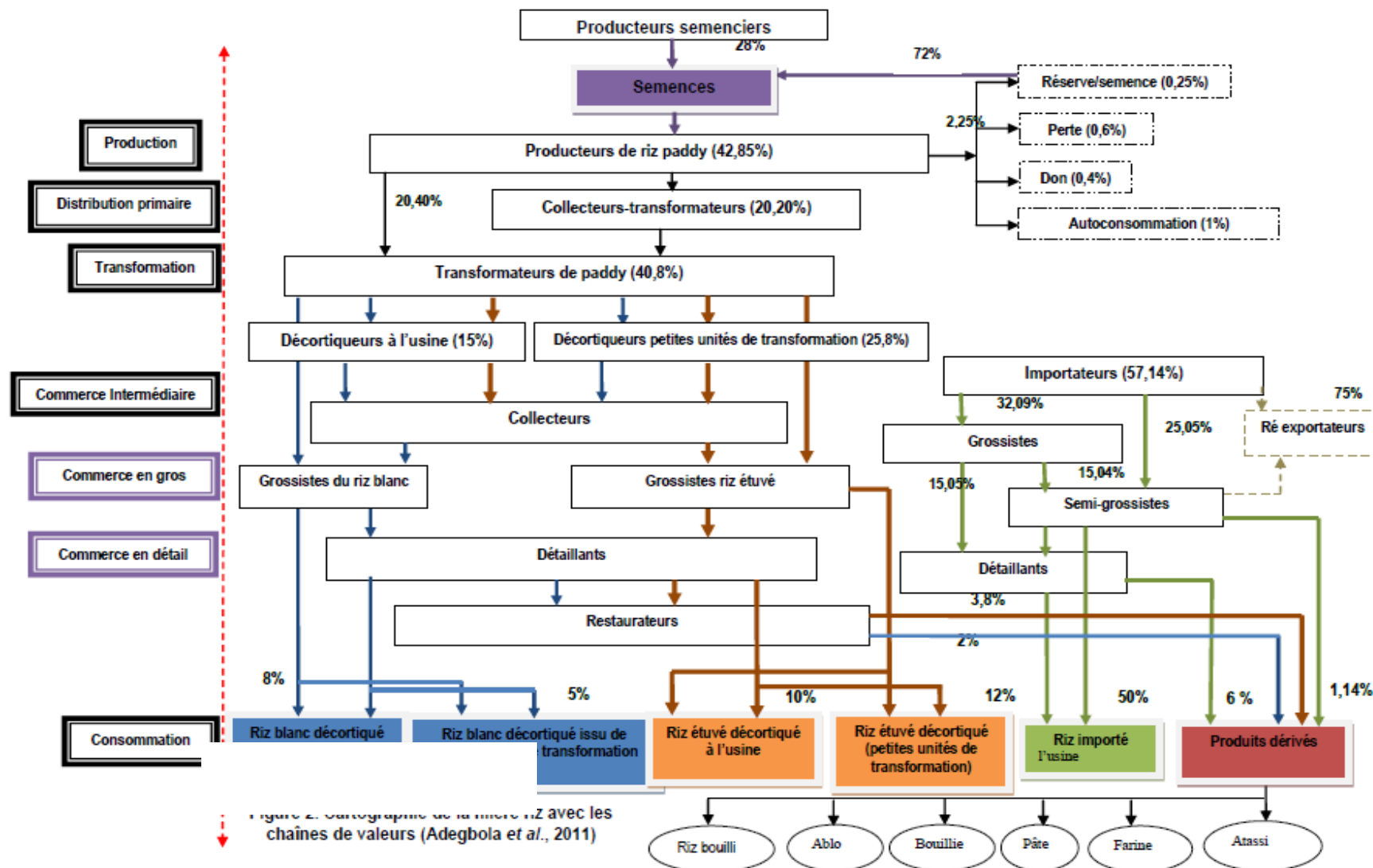


Figure 2. Cartographie de la mise en riz avec les chaînes de valeurs (Adegbola et al., 2011)

Figure 5. Rice sector mapping with its main value chains

Source : Adegbola et al., 2011

Opportunities for innovative agribusiness establishment along major Agricultural Value Chains in Benin's Agricultural Development Poles

- **Parboiled rice value chain**

The processing of paddy in parboiled rice was more intense in the central and northwestern region of Benin. But given that rice is increasingly popular in the Beninese market, the production of parboiled rice has spread to other parts of the country, particularly to the south. Much of the parboiled rice is also destined for the Nigerian market.

AVC parboiled rice has almost the same structures as white rice. The main difference is in the processing link where the paddy is first precooked (ie parboiled) before being husked. Processing unit promoters collect paddy through producer groups and / or collectors. Women play an important role in parboiling, processing and marketing rice in central and northern Benin.

3.3.3. Meat and small livestock

There are generally three types of meat: red meat, white meat and black meat. Red meat includes beef, mutton, goat, pork, and horse. Black meat comes from game. White meat includes veal, rabbit and poultry. Small livestock includes poultry farming, rabbit breeding, small ruminant farming, small-scale farming and other small animals' husbandries.

There are two meat production systems: the system controlled by the veterinary services and the uncontrolled system (domestic and illegal slaughter). In the controlled system, the animal can be slaughtered in the presence of the veterinarian or in his absence as in the case of small ruminants. The meat is delivered to the retailer of fresh meat and individuals, for various ceremonies and feasts through butchers. Thus, meat consumers are households, restaurants and structures such as garrisons, prisons, university centers, hospitals, etc. Veterinary services apply sanitary standards to inspected meat. Similarly, in slaughterhouses and slaughter areas, we meet all kinds of animals (young, adults, pregnant).

Between 2006 and 2013, beef production increased by around 20%, from 30770 tonnes to 36822 tonnes (see Figure 8). Those of the young have increased by 18% against 30% for pork. Poultry meat, on the other hand, showed a 25% increase between 2006 and 2013. Current levels of meat production can only cover an average of 8.41kg / inhabitant / year, well below 21kg. / inhabitant / year proposed standards by FAO (FAO, 2015).

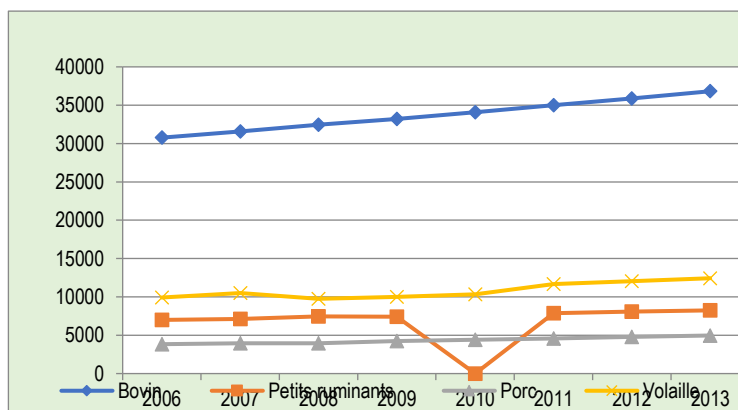


Figure 6. Evolution de la production de viande au Bénin de 2006 à 2013

Réalisée à partir de données disponibles sur <https://countrystat.org/home.aspx?c=BEN&tr=7> (22/11/2017)

The mapping of the meat sector from ruminants is presented in Figure 7. Poultry is the second largest source of meat after cattle (21% for poultry versus 58% for cattle, 13% for goat sheep and

7% for pork) (Agrisatch, 2014). In 2012, the local poultry flock is estimated at 16,941,000 head of traditional breed poultry (DE, 2012+) and 1,200,000 head of improved breed poultry (2012 census by UNAP Benin). According to UEMOA data, the chicken produced in Benin would contribute 2.4% (FAO, 2015) in the formation of Benin's agricultural turnover. It is practiced throughout the country.

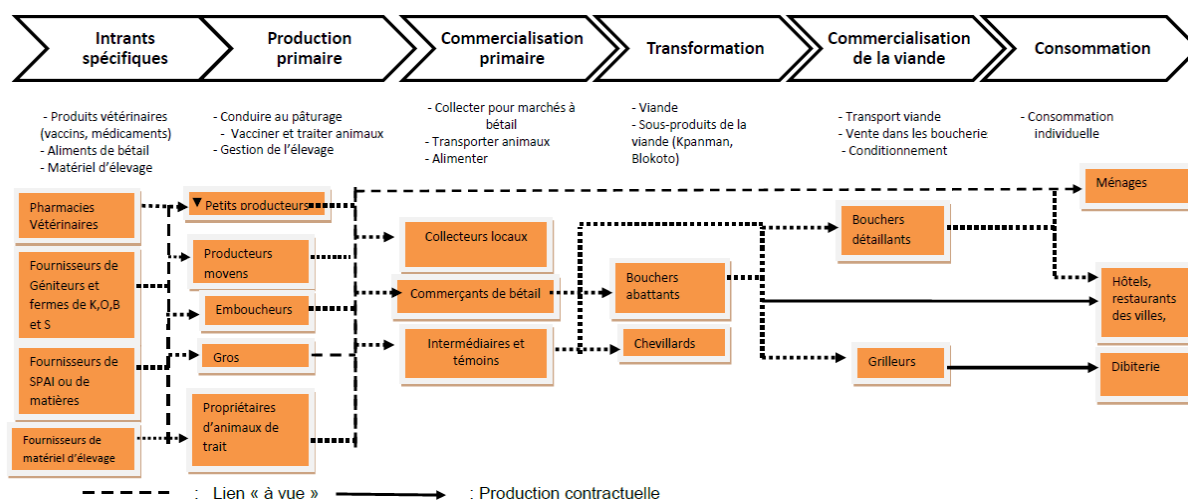


Figure 7. Cattle, goats, sheep, and meat value chain mapping
Source: PAFILAV, 2014

Table 7. Description of AVC for the sub-sector "white meat"

AVC	Bicyclette	Poulet de chair	Pintade
Intervention Link	Production, marketing, transformation	Production and marketing	Production, marketing
Production system	Village and backyard system (use local breeds, poultry are free during the day but sheltered during the night in summary shelters (traditional henhouses), the animal feeds by rambling and receives supplements from the breeder)	Small-scale commercialization (substantial improvement of family production through the application of a series of measures relating to the control of accidental losses, the improvement of food and health protection)	Village and barnyard system
Actors	Breeders, traders (collectors, village wholesalers, city wholesalers, retailers)	Breeders, input suppliers (day-old chicks, veterinary products, feedstocks), traders	Breeders, traders

• Smoked and dried meat value chain

Dried meat is very rare in Benin. The broilers buy the wholesale meat that they cook and grilled for sale. These include skewers, *chachagas* found throughout the country and beefsteak, steak and *chawarma* found in restaurants in major cities of Benin. The number of broilers throughout the country is unknown. These broilers also belong to professional associations. It should also be noted that garrisons, prisons, university centers, hospitals and hotels are also consumers and processors of fresh meat.

• *Traditional chicken and guinea fowl value chains*

These AVCs are part of the family poultry subsector. Family poultry farming is practiced throughout the country and plays an important role in improving peasant living conditions and reducing poverty, especially for women and children, the most vulnerable and at-risk children. This value chain mainly involves farmers and traders. Breeders invest very little in their extensive breeding. Several species of local, hardy and prolific breeds are raised outdoors in open makeshift buildings with low reliance on market inputs (FAO, 2015). The animals are sold to solve a family problem or kill to receive guests or at ceremonies or parties. The sale is made in the primary markets of collection either directly to the consumers or to collectors who resell them to wholesalers on the secondary markets of collection. The latter sell them in markets located in major cities such as Cotonou, Abomey, Porto Novo, Natitingou, Parakou ... It is important to note that these farms are dependent on diseases such as the Newcastle Pseudo avian pest. Two main actions are carried out by the government to improve this sub-sector (Operation "rooster" and training of Village Poultry Vaccinators (VVV)). In this sub-sector, there are AVC chicken bicycle or traditional chicken, guinea fowl, duck, pigeons, turkey, etc. Note that traditional chicken and guinea fowl deserve to be improved because the products from these AVCs are highly sought after and appreciated by Beninese consumers. Traditional chicken is produced all over the country while guinea fowl is no longer produced in the center and north of the country.

• *Rabbit meat value chain*

The rabbit is an unconventional species whose meat is very popular with consumers in Benin. The national production of rabbit is estimated at 73310 head in 2014 against 64878 head in 2013 (an increase of 13%). The production areas are the Atlantic-Littoral, Atacora Donga, the Mono Couffo (Livestock Directorate, 2015). Although it is profitable, this activity is in decline in the south of the country because of the low level of organization of the actors of the rabbit meat production sector, difficulty of access to the market, the decrease of the performances of the strains. and breeders used in rabbit breeding, low level of technical control and management of rabbit farms. The level of processing of rabbit meat is almost zero.

3.3.4. Market garden products

Market gardening has great potential for its contribution to economic growth, food and nutrition security and job creation both in suburban and rural areas (IFAD, 2015). The average annual income per market gardener can go beyond 3,700,000 FCFA (Ahouangninou, 2013). Market gardening is practiced throughout the entire territory but with a high concentration in the Ouémé valley, the municipalities of the coastal belt, some communes of Mono-Couffo, Alibori, Donga and around large agglomerations. Market gardening also develops along water reservoirs and in shallows (Singbo, 2012).

Annual average production in 2015 is estimated at 623,699 tonnes (see countrystat.org, 2017). In particular, tomato, onion and okra production increased by more than 10% between 2006 and 2015,

on average, an average increase of about 10% per year. Over the same period, production of peppers increased by about 82% while that of pumpkins, squash and pumpkins increased by only 2.5%. Overall, tomatoes remain the most important market gardening crop in Benin (49% of national vegetable production), followed by chili peppers (12%) and onions (11%). Market gardening is often small, ranging from 400 m² to 1 ha, with some larger farms (more than 5 ha), but

limited in number (IFAD, 2015, Singbo, 2012). Market gardening is therefore dominated by small producers. The main inputs used in market gardening are seeds, mineral and organic fertilizers, pesticides and irrigation equipment. For some varieties of tomato, and pepper, seeds are supplied to private gardeners by private companies that import most of the seeds (IFAD, 2015). It should be noted that market gardeners in rural areas have very little access to imported seeds. The multiplication and distribution of local market garden seeds is still an area to be organized (IFAD, 2015). However, there are ongoing initiatives such as the seed production unit of the Laboratory of Genetics, Biotechnologies and Seeds Sciences of the Faculty of Agricultural Sciences for the production and marketing of local vegetable seeds.

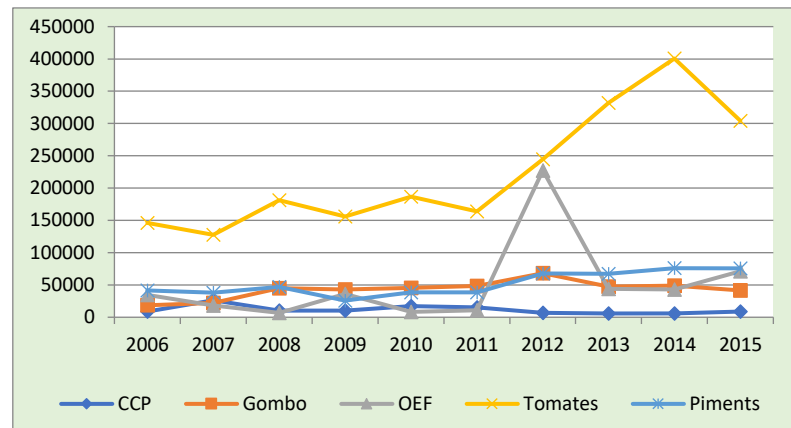


Figure 8. Evolution of the production of some vegetable crops in Benin from 2006 to 2015

Source: Made from data available on

<https://countrystat.org/home.aspx?c=BEN&tr=7> (22/11/2017)

CCP=Citrouilles, courges et potirons, OEF=Oignons (et échalotes) frais

It should be noted that Benin remains in deficit in terms of coverage of market garden products, particularly because of the seasonal nature of production and low yields. To make up for the deficit,

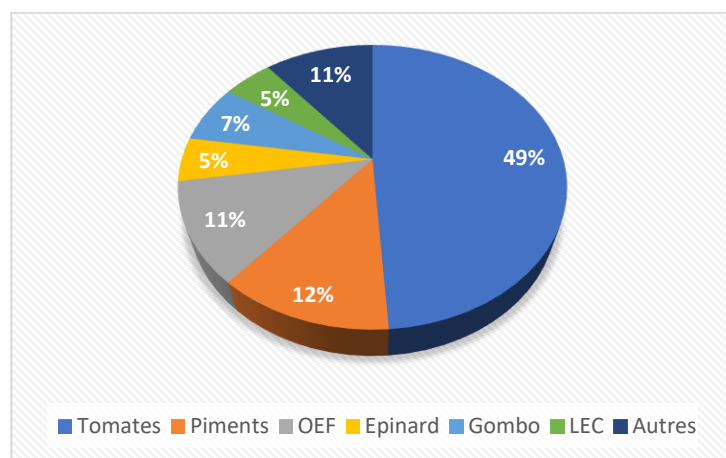


Figure 9. Share of different vegetable crops in the national vegetable production in Benin in 2015

Source: Made from data available on

<https://countrystat.org/home.aspx?c=BEN&tr=7> (2017)

LEC = Lettuce and chicory, OEF = Fresh onions (and shallots).

Other = Vegetables representing less than 5% = Pumpkins, squash and pumpkins, Other fresh vegetables, Carrots and turnips, Cabbages and other brassicaceae, Cucumbers and pickles, Potatoes.

mashed potatoes (tomato, pepper), millet (tomato powder, pepper powder, ground goussi), juice (watermelon), precooked (vegetable leaves).

Benin relies on exports from neighboring countries (Nigeria, Burkina-Faso, Togo and Ghana, Niger) (IFAD, 2015). Youths must seize the opportunity to fill this gap and position Benin as an exporter of vegetables.

Market produce is mainly consumed fresh. However, for the sake of conservation and increase of their market value, they undergo transformations even if they remain minimal. The main marketable products for each speculation of interest are presented in Table 8. The main forms of processing of market garden products are drying (tomato, pepper, leafy vegetables, okra),

Table 8. Main marketable products / Finals by market gardening

speculations	Main Marketable Products / Finals
Tomato	Fresh fruit, puree, shredded tomato, tomato pulp, powder
Pepper	Fresh fruits, dried chili pepper, chili powder, mashed potatoes
Carrot	Fresh carrot
Okra	Fresh okra, dried, powder
Leafy vegetables	Fresh, pre-cooked, dried leafy vegetables
Goussi	Almond, ground almond
Watermelon	Fresh fruit, juice

• *Tomato puree value chain*

The tomato puree AVC is recent and uses the tomato produced in Benin. It includes direct actors such as tomato producers, tomato puree production units and traders. The supply of locally produced tomato puree is relatively low and this product remains virtually non-existent in supermarkets. The installation of a young person on this type of activity would be interesting not only in terms of innovation but also in terms of market availability for the flow.

- ***Dried tomato value chain***

The preservation of fresh tomatoes in rural areas but also in urban areas is not easy. This has led national agricultural research to propose quick drying techniques for fresh tomatoes. The resulting dried tomato can be stored for a relatively longer time. Like tomato puree, the supply of dried tomatoes is relatively low compared to demand.

- ***Dried pepper value chain***

During the pepper season, part of the production is turned into dried pepper. This transformation is done both at the household level for personal use and at the level of specialized units for commercial purposes. However, processed volumes remain low and products are sold directly to consumers, especially for pre-cooked leafy vegetables, or retailers.

- ***Traditional leafy vegetables value chain***

The production of traditional leafy vegetables (gboman, chayo, fôtètè, etc.) takes place either in coastal areas, lowland and intra-urban. It remains a lucrative business for market gardeners with a quick return on investment because of the very short cycles of the species.

3.3.5. Cassava

Cassava ranks first among the root and tuber crops grown in Benin and plays a major role in feeding both rural and urban populations. Between 2006 and 2015, fresh cassava production increased by more than 34%, from 2,544,686 tonnes to 3,420,665 tonnes. It occupies 11% of the total area devoted to the main crops and is cultivated in all the agro-ecological zones of Benin. However, the large production areas are in the southern zone with two rainy seasons and in the transition zone.

Cassava also faces a decline in soil fertility coupled with the lack of mastery of improved farming techniques and the low utilization of improved clones. It is this situation that makes the cassava cultivars encountered by farmers have a high genetic diversity in terms of vegetative behavior with regard to diseases and pests. The defective quality of the planting material used by growers, coupled with the decline in soil fertility, is behind the low yields recorded. The problem of availability of cassava cuttings is acute in the southern part of the country. This is a significant opportunity to start a business producing cassava cuttings of improved varieties.

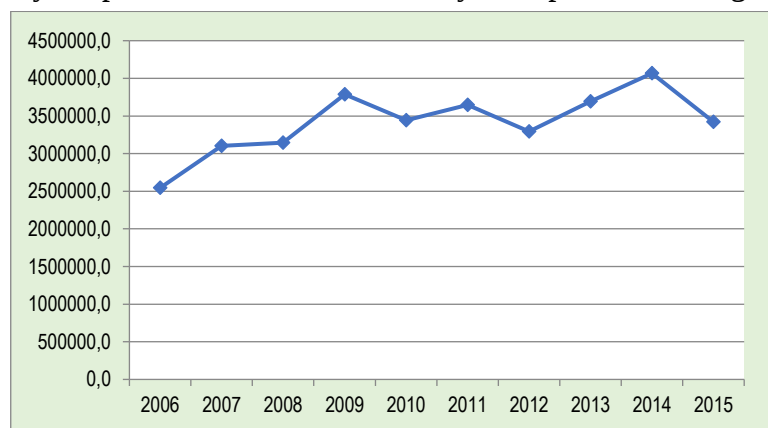


Figure 10. Evolution de la production de cassava au Bénin de 2006 à 2015

Source : Réalisée à partir de données disponibles sur <https://countrystat.org/home.aspx?c=BEN&tr=7> (2017)

Two main value chains have been selected as the most promising innovative companies namely "Bread Flour Cassava Flour" and "Lafoun". According to LARES (2013), 2% of cassava production is destined for the manufacture of lafoun. Performed only by women, the majority proceeds by traditional technology for the production of lafoun. Some women have some of the modern equipment for producing gari, tapioca, lafoun and starch. While mechanization reduces the workload, it also leads to additional costs that individual processors find difficult to cope with. Bread-making cassava flour is an industrial product introduced in the country that is consumed by local bakeries. However, the number of companies that invest in this area is still limited and the quantities produced are low. Lafoun is sold by processors locally, on local markets or to Nigeria. Bread-making cassava flour is sold to local bakeries.

3.3.6. Aquaculture

Production of fish (farmed and fished) in Benin covers only 35% of the estimated needs of 113 000 tons per year. The rest is filled by export fishery products. Horse mackerel, sardinella and mackerel are the main imported fish products (FAO, 2008). By maintaining the current level of consumption per capita, the deficit in fishery products to be filled in 2025 will be approximately 34 040 tonnes. On the other hand, if this level is raised to the standards recommended by FAO (15 to 18 kg of fish / inhabitant / year), the deficit would be between 111 218 and 152 563 tonnes, a large part of which should come from aquaculture. rather than fishing and imports (Rurangwa et al., 2014). This shows the opportunity to seize through aquaculture production. In addition to the domestic market, there are export opportunities to neighboring countries including Nigeria, which is already an importer of Clarias (fresh, live, smoked) from Benin (Rurangwa et al., 2014). Figure 13 presents the mapping of the Clarias sector in Benin.

In addition, it has been shown that the production link in aquaculture has the greatest potential for youths either as promoters, managers or technicians of aquaculture farms (FAO, 2014). The production of fresh fish requires the production of fry (seeds) and food. The supply of these inputs is still limited. Thus, the actors are confronted with the unavailability of quality local food and efficient strains of fish adapted to different aquaculture environments (Rurangwa et al., 2014). Producing fish food and fry (seeds) for farmers is a major for boosting aquaculture production which is still marginal between 300 and 600 tons per year. To achieve this, there is a need for a detailed analysis of the availability and cost of local fish feed ingredients, and laboratory and aquaculture farm experiments to test different food formulations (Rurangwa et al., 2014). With conclusive results, foods based on local ingredients can be formulated and made available at an affordable cost. The three most important AVCs with the most innovative companies selected in this study are "smoked / fresh clarias", "fresh tilapia" and shrimps.

• *Smoked / fresh clarias*

Although the limited level of fish production is still limited, there are opportunities for youths to export processed fish including smoked clarias to Nigeria. The export of processed fish including clarias is the most profitable activity of fish value chains (MAEP-DPP, 2011, ACED, 2017b). The intensification of production should stimulate the development of processing, packaging and related services (quality control, brokerage, etc.) and distribution of aquaculture products offering more business opportunities for youths (FAO, 2014).

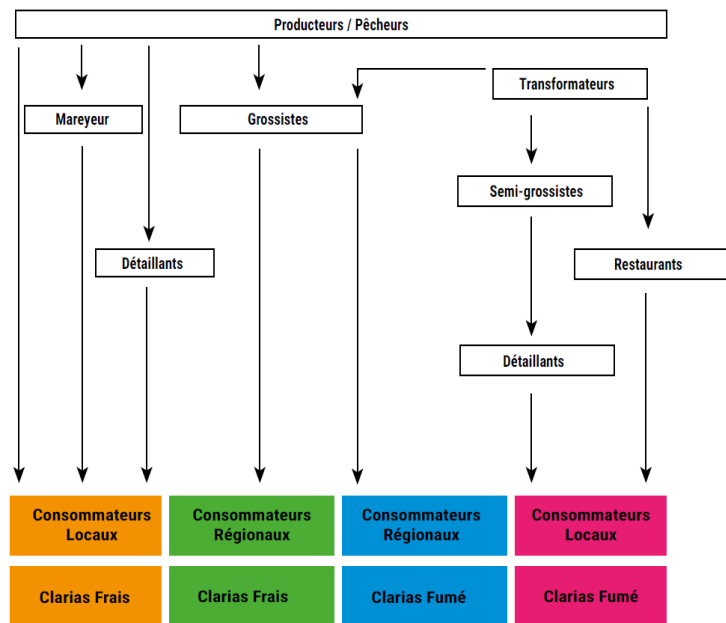


Figure 11. Clarias fish value chain mapping

Source: ACED, 2017

• *Fresh Tilapia*

Fresh tilapia is much more popular nationally and the preferred products are medium weights ranging from 200 to 400 grams. The AVC fresh clarias and fresh tilapia involve different actors namely the fishermen, the fry producers, the fish farmers (fattening or fattening), the traders (wholesalers, semi-wholesalers, retailers), the fishmongers, the carriers, processors and consumers.

• *Shrimp*

The shrimp AVCs are broken down into three links, namely production mainly from fishing, processing and marketing. The AVC fresh shrimp are found only in the production link and mainly concern shrimp fishermen. These fishermen use a craft technique that consists of walking in the water at two at night each holding the end of a net. Shrimp are trapped on their own. Thus fresh shrimps are obtained which are transported in bowls or baskets and sold to the fishmongers who carry out the conservation, processing (smoking, drying, salting, etc.) and marketing of smoked shrimp. The technology used for smoking is simple and includes the oven, roasting, fuel and fat for the lubrication of the mesh. In the villages where the main artisanal conservation technique is smoking, there are three types of kiln: the circular kiln in ground bar, the "chorkor" oven of rectangular shape in ground also bar and finally the kiln in keg.

3.3.7. Pineapple

Pineapple is one of the major sectors included in the GAP and the PSDSA. Its production is carried out intensively often on small sizes areas of less than 2ha. But some producers have large farms up to 150 ha (Gnimadi, 2008).

Pineapple production has increased dramatically in recent years, from 124 463 tonnes in 2006 to 244 207 tonnes in 2015, an increase of 96%. The peak of production is observed in 2012 with an annual tonnage of 375 637 tonnes (see Figure 12). The importance of the pineapple sector and its ability to sufficiently mobilize the interest of private investment is summarized in Table 9. Today, the State of Benin has provided in the PSDSA incentives and massive investments to reduce improve yields by 60 to 80 tonnes per ha and increase the level of export to 24 000 tonnes to the EU.

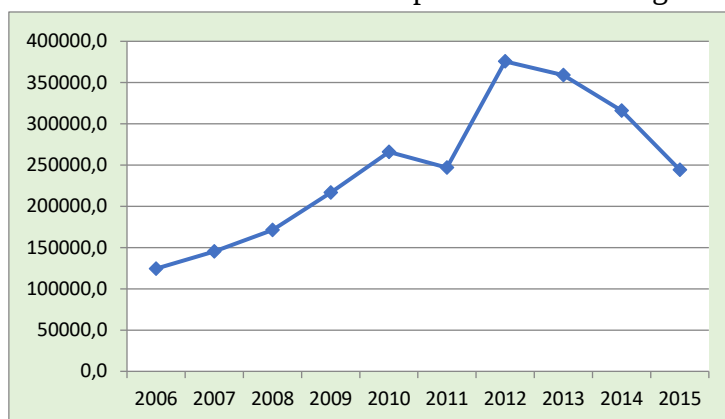


Figure 12. Evolution of pineapple production in Benin from 2006 to 2015
Source : <https://countrystat.org/home.aspx?c=BEN&tr=7> (2017)

Table 9. Importance of the pineapple industry in Benin

Criteria	Pineapple	Source
Contribution of the sector to agricultural GDP	1.28%	INSAE, 2011
Number of active persons involved in the sector (employment covered by the sector)	20,000	INSAE, 2011
Potential for regional and international demand for speculation (tons)	1200000	AVC Analysis, APRM 2011, GIZ 2011
Opportunities offered by the sector for private investment (inputs, transformations, logistics, interest of SMEs)	+++	MIC; ABEPEC; ANPME
SME dynamics around the sector	Fifty	AVC Analysis, APRM 2011, GIZ 2011
The sector is taken into account by sectoral agricultural and private sector development policies (notably PSRSA) in the major sectors group	Yes	PSRSA Document
Intérêt de la filière pour la promotion du Genre et la sécurité alimentaire	+	INSAE ; GAAR ; APRM

Légende : + = Faible ; ++ = moyenne ; +++ = Forte

Source : Rapport Etude qualité Jus d'pineapple (2013)

In Benin, the main marketable products in the pineapple industry are: fresh pineapple fruit, pineapple juice, dried pineapple, pineapple syrup. Depending on the destination of pineapple

products and products and existing markets, six (6) major value chains can be defined. This is (figure 13): the AVC "fresh pineapple for the European market", the AVC "fresh pineapple for the local market"; the AVC "fresh pineapple for the sub-regional market"; the AVC "pineapple juice for the local and regional market"; the AVC "dried pineapple for local, regional and European markets". To these chains one can also add the value chain of organic pineapple for the international market.

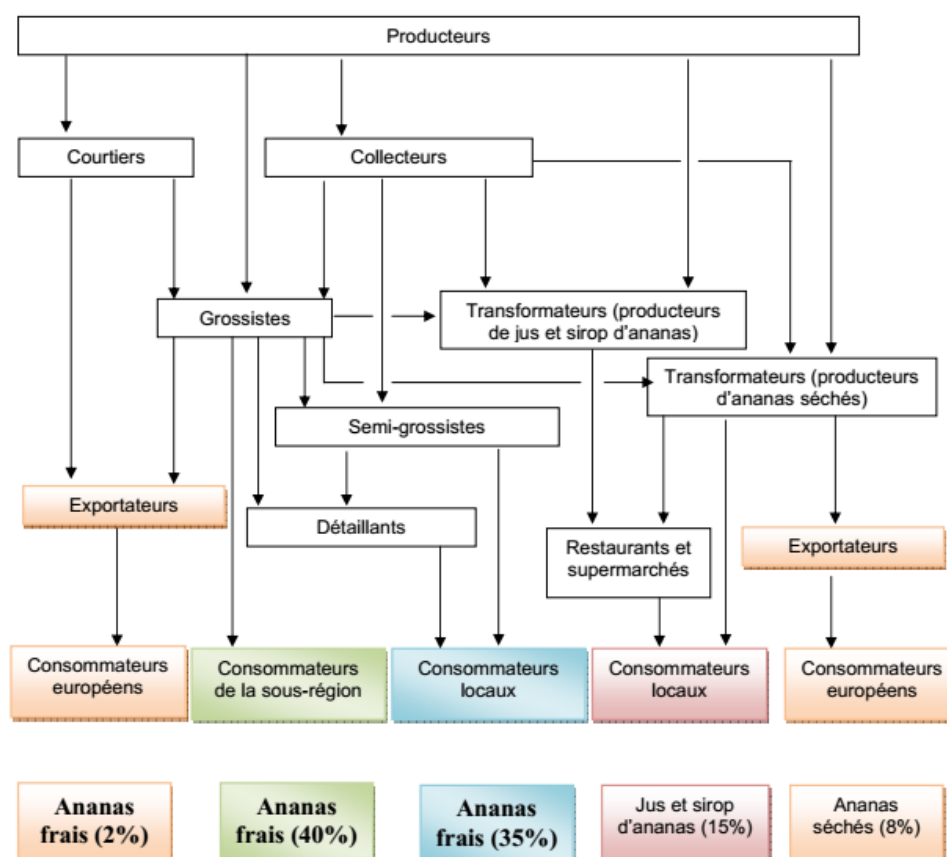


Figure 13. Pineapple Value Chains mapping
Source: Sodjinou *et al.* (2011)

In general, the main inputs required for pineapple production are specific fertilizers, pesticides, flowering and ripening inducers and planting material. At the processing level, there are processing consumables. Producers still do not have access to specific inputs and quality planting material (Fassinou Hotegni *et al.*, 2012). Young graduates have little leeway to invest in the import and distribution of chemical fertilizers and pesticides, but they can produce and market organic fertilizers and bio pesticides for organic production. In addition, they can benefit from the production and marketing of discards that are not currently produced by professional producers (Fadina, 2016). The quality (type of rejection, size, variety, purity) of the planting material influences productivity and determines the quality of the products (Fassinou Hotegni *et al.*, 2015). The need for waste production units is all the more important when the actors of the chain produce to meet the production requirements for a given market. Such an initiative could benefit from the

support of the Agricultural Diversification Support Program (PADA) or the Accelerated Productivity Project in West Africa (WAAPP) which have a component to facilitate producers' access to quality waste.

The three main AVCs identified as the most promising innovative entrepreneurs are those of international fresh pineapple, organic pineapple and pineapple juice.

- ***Fresh pineapple for international market value chain***

The production of fresh pineapple for the international market concerns varieties such as "Cayenne Smooth" for the European market, "Cayenne Smooth" and "Sugar Loaf" varieties for the sub-regional market and the MD2 variety. These varieties are produced in intensive cropping systems for export and semi intensive and extensive systems for national markets. Fadina (2016) has shown that sugar loaf pineapple could be labeled as a geographical indicator if the steps are taken by actors and public authorities. Meanwhile, the culmination of such a process, young graduates can seize the opportunity in the production that cannot yet cover the demand. Because of the scarcity of pineapple on the market, exporters cannot always meet their export contract (Fadina, 2016). The fresh pineapples produced are collected directly from growers in the field or in the grouping markets.

- ***Organic pineapple value chain***

Organic pineapple production, which is growing in demand in Europe, the United States and Asia (ICRA, IFDC, JOLISAA, 2011) is an opportunity for youths.

- ***Pineapple juice value chain***

The processing of pineapple juice is the predominant form of pineapple fruit processing in Benin. It is practiced by artisanal units (which are sometimes made in houses) and operate for the majority in the informal and modern units as having greater processing capacity and export part of their production (FRUIT D'OR, FRUITTILLOU and CSFT) (Agro Business Center, 2016). With the diversity of brands of fruit juice from pineapple on the market, young graduates have more to gain by putting on niche products such as organic pineapple juice that requires a certain technicality they have acquired during their university studies or that they can quickly acquire. The drying of pineapple (conventional or organic) and organic pineapple juice are full of enormous potential for the creation of added value (ICRA, IFDC, JOLISAA, 2011, ACED, 2017b).

3.4. Agricultural value chains environment analysis

The agricultural value chain environment consists of a set of actors that evolve in a network of dependent and complementary relationships. Its functioning is driven by actors and elements organized at three levels, including the micro level (operational actors), the meso level (support actors) and the macro level (facilitation actors) (see Figure 14).

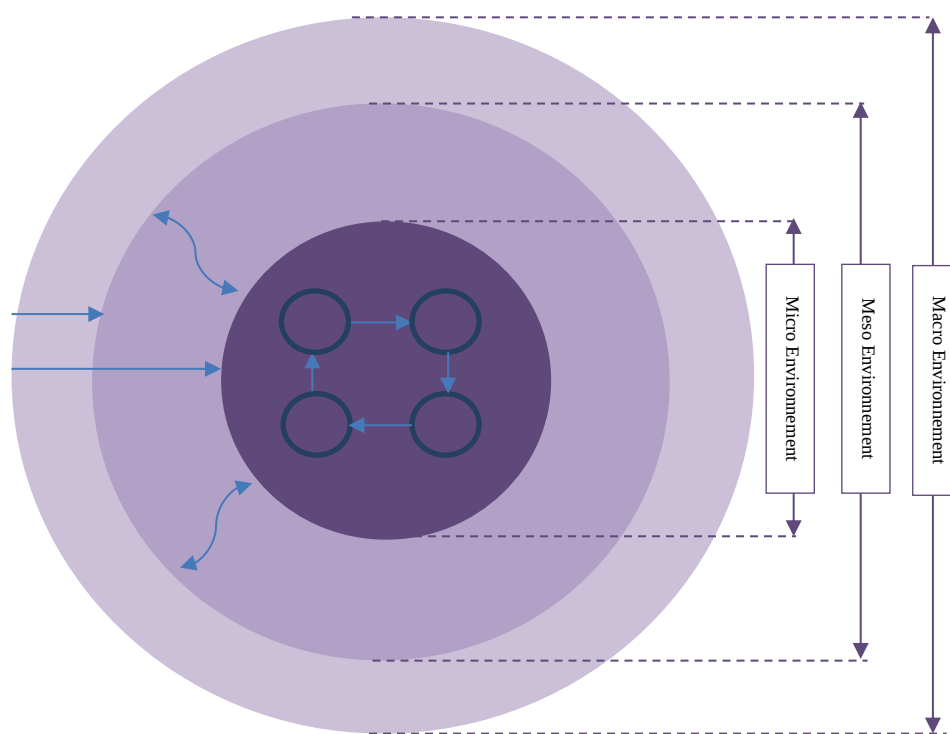


Figure 14. System of agricultural value chains

3.4.1. Operational environment of agricultural value chains

At the level of the operational environment we distinguish the primary actors that operate along agricultural value chains from the supply of inputs to consumption. This level of agricultural value chains is characterized by flows of goods and services, information and transactions. The actors include:

- **Input suppliers**

These are private or public actors, companies or individuals who are specialized in the production, distribution and marketing of: improved seeds, fertilizers (chemical and organic), plant protection (Herbicides, pesticides, insecticides, fungicides), irrigation packs, day-old chicks, feed (feed) and other veterinary products, agricultural machinery, etc. In Benin, input supply was for a long time ensured by the State through certified seed multiplication farms and later to producer organizers, the National Society for Agricultural Promotion (SONAPRA), the Central Agricultural Input Procurement (CAIA) and by private companies including the Intercontinental Distribution Company (SDI). These inputs were mainly oriented towards cotton and maize. Insufficient inputs from these official suppliers, poor governance and lack of inputs for food and other crops have given way to an informal network of input distribution that extends to neighboring countries including Nigeria and Togo. Several projects and programs have worked to improve the seed

sector, that of fertilizers and machinery including: the Emergency Program of Support to Food Security (PUASA), the project of creation of seed banks in 54 communes of Benin, the Agricultural Sector Development Support Project (PADA Phase II), the Pilot Project for Food Security Support (PASA), the Program for the Promotion of Agricultural Mechanization in Benin (PPMA) etc. Despite these efforts, the agricultural sector continues to suffer from availability of inputs in quantity and quality. Some multinationals are settling small to capture this opportunity. This is the case of Benin Seeds, Savanna and Tropicasem. Other local companies are leaders in their field: Group Veto Services. Still others are in the process of positioning, particularly on organic inputs for which they have a comparative advantage. These include: Songhai Center, Agro Bio Business Center, Bio Phyto Collines, GNLD, Bioforever.

• *Producers (farmers and breeders)*

These are farmers and breeders, including market gardeners and ranchers. Overall, they are distributed throughout the national territory with various production systems (extensive, semi-intensive and intensive). Agricultural colonies and large farms are found in central and northern Benin where population density is low and agricultural areas are still available. Market gardeners are generally encountered along the coast or the banks of inland waterways (Niger, Ouémé, mono etc.). Agricultural producers are generally people of all ages and all sexes, usually without formal agricultural education, who perpetuate agricultural practices that are acquired and passed on from generation to generation. More and more, there is a new category of producers who have come to undertake agriculture. These are investors (AgriSatch, CRIAB / Tonon Foundation etc.), serving officials, recent graduates or retired officials, with or without agricultural training. Cases of massive acquisition of agricultural land by foreign investors (Chinese, Pakistani and Indian) are also reported. Producers in general face the problem of availability and access to land, as is the case of the departments of Mono and Couffo, where the area per agricultural asset is less than 0.5 ha. These producers are then forced to migrate to large agricultural areas like Djidja, Savè, Ouèssè and Tchaourou. Producers also face the problem of access to quality inputs in sufficient quantity, at the right time and at the right price. Agricultural production remains almost totally dependent on the rain. With climate change, rains are rare, irregular and violent, compromising the agricultural calendar and crop yield. Irrigation remains very underdeveloped because of the very high initial investment. Irrigation is observed mainly on vegetable parcels that offer a better return on investment. Despite the high telephone penetration, producers have very little access to information and have very little influence on the pricing of agricultural products and are sometimes forced to sell off their production for lack of a more profitable market. Given these elements, the agricultural sector is perceived as a risky, unpredictable and uncertain sector.

• *Product processors*

Whether artisanal or industrial, the actors bring added value to agricultural products coming out of fields and farms. We find in this units of individual / family or cooperative transformations, small, medium-sized enterprises (Songhai Center, Tropical Fruit Drying Center, etc.) and large

enterprises (Fruits Tillou, Ira, SODECO, Fludor, etc.). The actors in this link are usually women (but more and more men too) of all ages. They are generally confronted with the problems of the seasonality of raw materials, the availability of energy and its cost, the packaging and packaging of processed products, as well as the narrowness of the domestic market. Retailers. These players deal with the distribution of agricultural and agri-food products. Wholesalers source directly from producers and processors, supply local and regional retailers and exporters. Wholesalers are generally confronted with the problems of processing and preserving agricultural products, particularly those that are highly perishable, such as tomatoes and pineapples.

- **Exporters of agricultural and agri-food products**

These are actors that provide a solution to the narrowness of the local market by exploring other regional and international markets for the sale of agricultural and agri-food products. Benin's agricultural exports are dominated by three commodity groups: cotton, oilseeds and nuts (shea, cottonseed, palm kernel) and edible fruits (cashew nuts and pineapples). The export is made by both nationals and foreigners, organized in companies or groups of companies. The export markets for food crops and market gardening products are Nigeria and Togo. The other export products (Cotton, Cashew, Pineapple, Shea etc.) go to Europe including France, Belgium, Germany, the Netherlands, Luxembourg etc., and more and more to Middle East countries include India, Pakistan, China, Saudi Arabia. Exporters are faced with problems of insufficient and intermittent supply of products that do not allow them to maintain large contracts, compliance with standards and standards, packaging and transportation of products. The export of certain agricultural and agri-food products is sometimes regulated at the national, regional and international levels with strict export conditions. For example, since 2016, the export of cashews is subject to the possession of a license whose bank guarantee amounts to 20,000,000 FCFA. The export of raw nuts by land is prohibited. The export link is relatively selective for young entrepreneurs.

- ***Consumers of agricultural and agri-food products.***

They are the last group of operational actors in agricultural value chains. Depending on the purchasing power, we can distinguish between non-demanding consumers and those demanding and selective. The first group gets their supplies from local or nearby markets. This group represents the large mass of consumers. They are generally confronted with the problems of product freshness, availability and price volatility. The group of selective consumers are either by religious conformity or by choice of life. In the latter case they have considerable purchasing power to demand characteristics typical of agricultural products (variety type, organic products, geographical identity, label, freshness) and are ready to put the price. Selective consumers are also faced with problems of availability, compliance with requirements and traceability.

3.4.2. Support Environment for Agricultural Value Chains

It is the environment of actors in both the public and private sectors that provide agricultural value chain support services. These include research and development institutions, extension services,

training and support centers and services, agricultural and market information access services, agricultural finance services, etc.

- ***Research and development institutions providing services oriented towards agricultural value chains***

These are public or private institutions which, through their research activities, help to solve certain technical problems (improvement of varieties, formulation and test of fertilizer dose, biological control, optimal production technique, etc.). In these services we distinguish public sector actors (INRAB with its different centers and research sites), national universities and institutes oriented towards agriculture (FSA, FA, UNA), international research centers (IITA, CIRAD etc), private centers such as the Center for Research and Incubation Aquaculture of Benin (CRIAB), the Songhai Center, the Cuniculture Research and Information Center (CECURI), the International Center for Integrated Eco-Development (CECODI etc. Several innovations have emerged from these institutions and research centers.

- ***Extension services focused on agricultural value chains.***

This function has for a long time been assumed by the technical services of the Ministry of Agriculture, Livestock and Fisheries, and many non-governmental organizations, as well as the technical and development services of technical and financial partners (BTC, GIZ, AFD, SNV etc.). These different actors (public and private) transform research results into practical knowledge that is easily applicable by operational actors in agricultural value chains. The extension is done either by direct exchange (Extensionist - Producer / Transformer), or between producers (Pair Producer / Transformer - Producer / Transformer), or on visit of the demonstration plots.

- ***Training and advisory centers focused on agricultural value chains***

They are agricultural technical training centers that train the actors who want to invest in the agricultural sector. This service is provided by the public sector including agricultural high schools (*Sekou, Ina, Adjahoume, Kpataba, Natitingou*), by the private sector (Songhai Center, Center les *Oliviers*, the project of the Center of Arts and Crafts of the Woman of Parakou, the International Training Center in Agriculture etc.) and the professional agricultural organizations (FUPRO, ANAFE, ANOPER, ANAB, FENAPECHE, PNOPPA, and their dismemberments).

- ***Access to agricultural and market information services***

These services have for a long time been absent from the environment of actors supporting agricultural value chains. They are still at their beginning in Benin. Examples include Agrihub / AgriProfocus, which produces newsletters, links Producers - Investors or Producers / Transformers - Consumers / Exporters, and organizes fairs to encourage networking and networking.

- ***Agricultural finance services***

Since the disappearance of the Beninese Development Bank and the Caisse Nationale de Crédit Agricole, the participation of commercial banks in the financing of the agricultural sector is low and generally oriented towards the upstream activities of agricultural value chains, and towards speculation and specific sectors: Cotton (ginning, import and distribution of inputs), Poultry farming, Pineapple. Commercial banks are very reluctant to go to grassroots production activities, for which credits are considered very high risk and high management costs. It is therefore agricultural credit institutions (eg CLCAM) and microfinance institutions and actors in agricultural value chains that provide the bulk of agricultural financing.

3.4.3. Facilitation environment for agricultural value chains

It is all the reforms, policies, infrastructures at the regional, national and local levels that facilitate the activities of the operational and support actors. Benin's agricultural policy environment has evolved considerably over time to adapt to the challenges of the contemporary world, creating favorable conditions for certain sectors as well as inhibiting conditions for others.

The massive disengagement of the State resulting from structural adjustment policies between 1989 and 1999 led to a period of sharp decline for Beninese agriculture. For about a decade, the state took over the sector with the development of the strategic plan for boosting the agricultural sector (PSRSA), offering a vision of agricultural development of the country in the long term. PSRSA has identified a set of 14 strategies to strengthen agricultural sectors and modernize them. The plan is to introduce:

- an input policy;
- the realization of hydro-agricultural developments;
- a mechanization policy;
- the development of storage and transformation infrastructures.

The return of the state to the agricultural sector has resulted in massive investment in agriculture. The Benin-Alafia 2025 Development Strategy, Benin's Strategic Development Objectives (OSD) and the Government's 2016-2021 Action Program have given an important place to the agricultural sector. More generally, between 2007 and 2017, Benin has considerably increased the budget allocated to the agricultural sector and has undertaken reforms such as the reform on land security (law 2007-03 on rural land tenure), the restructuring of the institutional framework with the creation of agricultural development poles (ADP) and territorial agricultural development agencies (ATDA), the revitalization of the public-private partnership for the financing of the agricultural sector. During the last decade, the State also multiplied the projects of support, notably with the food security (Ex Project of support for food security through food intensification, PASAIA, Emergency plan of support to food security, PUASA), agricultural development in a context of decentralization (Ex: Agricultural Development Program of the communes, ADPC), or valuation of the valleys (Ex: Agricultural Diversification Program through valorization of the valleys, ADP-

VV or Agricultural Infrastructure Support Project in the Ouémé Valley, PAIA-VO). In 2017, the state budget allocated to the agricultural sector is CFAF 105 billion for a massive investment in value chains whose products are high added value including pineapple, cashew and vegetables. The State has also undertaken reforms to reorganize some export-oriented sectors, particularly the cashew nut. These reforms are designed to control price fluctuations, encourage local production and processing, and regulate exports.

In general, Benin's agricultural development policy is characterized by two major visions: the promotion of intensive agriculture with massive State support (agricultural mechanization, inputs, improved varieties, etc.) and the promotion of family farming (support to smallholders, local varieties etc.). In both cases, agricultural development strategies are moving towards better regional specialization, agricultural diversification.

The environment of agricultural sectors in Benin, however, remains largely unfavorable for the exploitation of the full potential of the sector, due to a certain number of constraints which therefore represent challenges to be met. These include:

- ***The need for water control***

Climate change and its consequences on the water regime and the functioning of watersheds have a very negative impact on agricultural calendars and crop yields. Irrigation techniques that are very underdeveloped and adopted are observed almost exclusively at the level of vegetable and rice fields. Their installation, operation and maintenance require investments generally beyond the means of producers.

- ***Agricultural mechanization and agribusiness industrialization***

Beninese agriculture has for a long time been a family farming with little market orientation, characterized by the use of rudimentary and archaic tools. Mechanization tests (animal traction and motorization) are still struggling to take due to the purchase cost of equipment and also the lack of skills for the maintenance of equipment. The processing sub-sector is also characterized by under-industrialization with the consequent export of raw materials.

- ***Provisions to secure, protect and enhance agricultural land***

Land is the primary factor of agricultural production. Access to land is problematic in Benin because of the overlap and unclear boundaries between customary and statutory rights. Outstanding schemes, notably the Land and Land Code and the Rural Land Plan, partly solve the land challenges, but do not complement the problem of protecting farmland. Indeed, in recent years we have been witnessing the phenomenon of land grabbing by multinationals and foreign economic operators, who dispossess the small producers of their land and constitute large areas of agricultural land in a holding for the production of culture for export or for the exploitation of the subsoil

• *The need for a financing policy for the agricultural and agri-food sector*

Agriculture has always been considered by banking institutions as a high-risk sector. To this end, very few institutions are committed to it and those who venture into it have safeguards and deadlines that are often unaccountable with apicultural calendars and the capacities of producers. It is therefore urgent to put in place mechanisms for portfolio creation, access facilitation and risk management to boost investment in the agricultural sector.

3.5. Constraints and strengths of major value chains and AVCs

The synthesis of the strengths, weaknesses, opportunities and threats of the different major sectors and AVCs are presented in Table 10. An analysis of each element of this table is made in the form of strengths and constraints in the following paragraphs.

Table 10. Summary of the strengths, weaknesses, opportunities and threats of the different major AVCs

STRENGTHS	WEAKNESSES
– Existence of research results – The passion of producers and the increase of their number – Level of structuring of actors especially for rice and soy – High quality products highly appreciated on the international market – Development of semi-industrial and industrial processing unit of agricultural products – Existence of successful varieties and breeds – Existence of veterinary organizations (animal production) – Organization of vaccination campaigns against major livestock diseases (CBPP, Pasteurellosis)	– Production equipment archaic or unavailable / Low level of mechanization – Low availability of quality and certified seeds – Packaging of very unattractive products / Difficulty of access to quality packaging (especially rice) – Difficulty of access to credits adapted to agricultural sectors – Low availability of specialized labor – Limits in the quality of products from local production – Low availability of specific inputs – Low negotiating capacity of actors – Low production yield – Non-respect of production standards (case of pineapple) – Difficulties to comply with the requirements of the external market (in particular European) – Low spatial planning (perimeters, lowlands, etc.) for market gardening and rice growing – Low energy availability and poor quality (processing plants)
OPPORTUNITIES	THREAT
– Existence of a strong and growing demand – Existence of new niche markets – Political will and the existence of national development strategies – Availability of vast agricultural spaces – Existence of bilateral preferential trade agreements (AGOA) and multilateral trade agreements (WAEMU and ECOWAS common market) – Prioritization of the sectors in the new Strategic Plan for the Development of the Agricultural Sector – Influence of TFPs and NGOs for the promotion of agricultural AVCs	– Competition of imported products – Difficulties of access to land and insecurity – Unattractive tax policy for the local business – Difficulties accessing adapted financing – Influence of climatic hazards – Appearance of epizootic diseases with insufficient inspection and sanitary control at transboundary transhumance level (case of foot-and-mouth disease)

3.5.1. Analysis of constraints in major value chains and AVCs

The main constraints identified have been analyzed below, highlighting the opportunity to create an innovative company that emerges. These constraints as well as the opportunities that are attached to them are as follows:

- ***Low level of mechanization***

In the different major sectors, the production or processing tools used are still traditional, archaic or unavailable. Indeed, the level of mechanization of Beninese agriculture is still relatively low. As a result, agricultural productivity is low compared to results obtained in the laboratory or in other countries.

- ***Low availability of quality and certified seeds***

The peasants still take in the old stock to constitute the necessary seed. As a result, the performance obtained is often inferior to the expected results. The problem of seeds is acute for all speculations but especially for market gardening where producers are highly dependent on foreign firms for their supply. The seed sector represents an opportunity for innovative business creation for youths. Especially if we know that the first component of the first strategic axis of PSDSA is dedicated to increasing the availability and accessibility of quality seeds and plants (crops, animals and fish). This is one of the major challenges to meet in order to achieve the objectives set by the agricultural sector. To this end, the Government wishes to facilitate access to funding for seed producers and distributors. With regard to fisheries production, the PSDSA provides, among other things, for the establishment of efficient fingerling farms in areas suitable for fish farming and / or those with bodies of water to be stocked, and the establishment of in place shrimp juvenile production farms.

- ***Packaging of very unattractive products / Difficulty of access to quality packaging (especially rice)***

Packaging is an important element in making products more attractive and thus better selling them. The question of packaging arises for several national products such as rice, pineapple, pineapple juice and others. This issue is taken seriously by the Government which, as stipulated in the PSDSA, intends to address this issue with particular attention and the local manufacture of such packaging will be promoted while integrating aspects of standardization and labelling of marketable products. Local production of quality packaging is therefore an opportunity for innovative business creation for youths.

- ***Difficulties accessing the financing / credits adapted***

The issue of financing and access to credit arises at various levels in the different value chains. This is expressed in terms of high interest rates, unsuitable repayment conditions for agricultural activities and insufficient amounts.

- ***Limits in the quality of products from local production***

The quality of agri-food and agricultural products manufactured in Benin has improved in recent years. However, problems still remain. As an example, in white rice and parboiled rice, black dots and foreign bodies are still present in what is placed on the market. This reduces its ability to compete with imports.

- ***Low availability of specific inputs***

Specific inputs such as fertilizer, pesticides and others are not often available. Producers are therefore obliged either to use inputs from all sources or to abstain from them.

- ***Low negotiating capacity of actors***

The negotiating capacity of the different AVC actors is generally weak, particularly with regard to the negotiation of financing and commercial negotiation.

- ***Low production yield***

The low level of yield is the result of a combination of various factors including non-respect of technical routes and poor quality of seed used. This could also be explained by the use of traditional tools, non-control of water and inadequate technical supervision.

- ***Difficulties to comply with the requirements of the external market (in particular European)***

In the export of pineapple, fruit must meet the standards and standards of the countries of destination. However, limits to compliance with production standards are noted especially for pineapple, thus making it difficult to export large quantities.

- ***Low energy availability and poor quality (processing plants)***

The availability of energy remains problematic in Benin. The use of solar energy would be a durable but relatively expensive solution in terms of initial investment.

- ***Competition of imported products***

Beninese products face competition from massively imported products. These imported products are sold at a low price given that import taxes are fairly lenient. As a result, our products are not competitive enough. In this circumstance, start-up support for young entrepreneurs is necessary to enable them to face the competition better. This support can be in the form of tax relief or training or support for obtaining appropriate financing. Finally, the tax policy is unappealing for the local business.

- ***Difficulties of access to land and land insecurity***

Access to land and land insecurity remains a concern despite all the efforts made by the Beninese government. This problem is even more crucial for a young person who does not have enough financial means.

- ***Influence of climatic hazards***

Climate hazards are a serious problem for Beninese agriculture. Water control would be a good strategy to mitigate climate risks. More specifically, the promotion of climate-smart agriculture practices must mitigate the negative impacts of climate change and significantly improve the resilience of rural households (PSDSA, 2017).

- ***Epizootic outbreaks with insufficient inspection and sanitary control at cross-border transhumance (case of foot-and-mouth disease)***

Animal production is mainly confronted with epizootics. This is the case for example rabbit with VHD (Viral Hemorrhagic Disease), swine with swine fever, bird flu with poultry, etc. This situation is aggravated by the lack of inspection and sanitary control of transboundary transhumance (case of foot-and-mouth disease).

3.5.2. Analysis of assets in major value chains and AVCs

The main assets are:

- ***Existence of search results***

Research results exist at various levels, especially with respect to improved seed production techniques, processing techniques for agricultural products and others. These research achievements are an opportunity to create innovative businesses for youths.

- ***Rise of producers and increase of their number***

There is a real craze for the production of various crops such as small livestock (rabbit, poultry, small ruminants, etc.), rice growing, market gardening, soybean production and many others. This indicates, on the one hand, that there is a market for the disposal of certified improved seeds, and on the other hand the availability of raw material for processing and marketing.

- ***Level of structuring of the actors***

The level of organization of the actors in the different major sectors has improved in recent years. Thus, apart from the cotton sector, actors in sectors such as rice, soybean and cashew are relatively organized both in the links and between the links.

- ***High quality products highly appreciated on the international market***

Beninese products have improved in quality in recent years and are increasingly appreciated and consumed both nationally and internationally. This explains the increase in demand that is becoming stronger. However, efforts must be made to ensure that this quality is similar to that of imported products.

- ***Development of semi-industrial and industrial processing unit of agricultural products***

In recent years, Benin's agricultural space has been marked by the development of several processing units for agricultural and agri-food products. Some of these units are relatively modern and others are semi-modern. These units (case of Fludor and SHB) constitute opportunities for the

sale of products. For the next five years, the Government wants the private sector to invest in the creation of agricultural and agro-food enterprises to improve the level of processing of agricultural products and to give them more added value. To this end, structuring agricultural investments will be put in place thanks to the Public-Private Partnership (PPP).

- ***Existence of successful varieties and breeds***

Improved varieties are available for the various major crop species and improved breeds also exist through the activities of various TFPs. The main concern at this level concerns the availability of certified seeds.

- ***Existence of veterinary organizations (animal production)***

At the animal production level, veterinarians are relatively well organized to better monitor animals. We also notice the organization of vaccination campaigns against major livestock diseases (CBPP, Pasteurellosis).

- ***Existence of new niche markets***

As it will be presented in section 3.6, niche market exist for the different products coming from the major sectors. A potential market is also available at the national, regional and international levels. But it is necessary that the quality of products is at the rendezvous to take advantage of these market opportunities.

- ***Political will and the existence of national development strategies***

There is a political will for the development of major value chains identified in this study. These sectors are listed not only as a major but also benefit, for some, such as rice, from a document of development strategies. It is also worth noting the enthusiasm of TFPs and NGOs for the promotion of major agricultural AVCs.

- ***Availability of large agricultural areas***

There are still broad areas for increasing agricultural area. Indeed, land is available in Benin even if there are problems of land insecurity.

- ***Existence of bilateral and multilateral preferential trade agreements***

Benin is part of a regional geographical area allowing it to sell these products. For example, the Nigerian market is still huge especially for products such as clarias, lafoun, paddy rice and parboiled rice as well as for market garden products. It should be noted also the existence of bilateral preferential trade agreements (AGOA) and multilateral trade agreements (UEMOA common market and ECOWAS).

3.6. Market trends analysis

3.6.1. Analysis of current markets, potential markets and niche market

The market is an essential element in any agribusiness setting up project. Pre-project studies consider existing or current markets. By integrating the concept of agribusiness in the potential markets and niche market should be considered. Table 11 summarizes current markets, potential markets and niche market for the different major sectors and AVCs.

Table 11. Summary on current markets, potential markets and niche market for different AVCs

Selected AVC	Area of high production	Current markets	Potential markets	Niche market
Fresh meat	Borgou, Littoral, Atacora, Alibori (cattle and goats), Atlantic (sheep and goats)	National	National	Live animals: modern slaughterhouse, traditional slaughterhouses, slaughter areas
Dried meat	Alibori, Atacora	Regional (Live animals)	Regional (Nigeria)	Meat: Cattle, goat and sheep meat grills (many) Restaurants Hospitals, garrisons and prisons
Smoked meat	Throughout the country but more Borgou, Littoral, Atacora, Alibori, goats)	National	National,	ND
Traditional chicken	Atlantic, Coastline, Ouémé, Plateau, Borgou, Alibori, Mono Couffo	National	Regional (Niger, Burkina Faso, Nigeria)	Restaurants, Snack bars, shops, supermarkets
Guinea fowl	Northern Benin	National	National	Restaurants, hospitals, hotels, grillers, snack
Rabbit	Atlantic, Coastline, Atacora, Donga, Mono, Couffo	National (local markets)	National	Restaurants, hospitals, hotels, grillers, snack,
Dried pepper	Atlantic, Coastline, Ouémé, Plateau, Borgou, Alibori	National	National	Restaurants, Hotels, Housewares (Door to door),
Fruit tomato	Atlantic, Coastline, Ouémé, Plateau, Borgou, Alibori, Mono Couffo	National (local market)	National Regional (Nigeria, Togo) National Regional	Organic market (AMAP-Benin) Hotels, Restaurants,
Tomato puree	Atlantic, Coastline	National (local markets, urban agglomerations)		
Dried tomato	Borgou	Regional (weak)		
Fresh vegetables	Atlantic, Coastline, Ouémé, Plateau, Mono, Couffo	National		
Soybean	Alibori, Borgou, Atacora, Zou, Collines	Regional (case of canned tomato plants)	International (pili pili for its therapeutic nature)	

Milk, mustard and soy yogurt	Alibori, Borgou, Atacora, Zou, Collines	National (local markets)	National	
Bread flour from cassava	Atlantic	National (local markets, urban agglomerations)	Regional (Nigeria, Togo, Burkina-Faso, Niger and Ghana)	-Market bio,
Lafoun	Zou, Collines, Ouémé, Plateau, Mono, Couffo	National		-Producers of infant formula,
Fresh pineapple	Atlantic Zou Collines Mono Couffo	-Regional (Nigeria, Togo, Burkina-Faso, Niger and Ghana)		-Boutiques, supermarkets,
Organic pineapple	Atlantic, Zou	National		-Restaurants, hotels, supermarkets, shops,
Pineapple juice	Atlantic, Coastline	National (bakeries)	-National	-Snack, pastries, schools, (case of milk and soy yogurt),
Paddy rice	Atacora, Donga, Borgou, Alibori, Zou, Collines	National (local markets near production areas)	-Regional (Nigeria, Togo, Burkina-Faso, Niger and Ghana)	Bakeries, Shops, supermarkets, pastries
White rice	Atacora, Donga, Borgou, Alibori, Zou, Collines	National International	-International market	
Parboiled rice	Atacora, Donga, Borgou, Alibori, Zou, Collines			Shops
Fresh clarias	Atlantic, Ouémé, Alibori	International National National,	National Regional	Organic Markets, Benin Label, Healthy Foods, Ecolodjah Store
Fresh Tilapia	Atlantic, Ouémé, Alibori			Shops, supermarkets, snacks, restaurants, pastry shops, hotels, refreshments,
Clarias smoke	Atlantic, Ouémé, Alibori			Processing plants
shrimps	South of the country Lakes Ahémé and the Nokoué and the lagoon of Porto Novo	Regional	International	Shops, supermarkets

• Soy

To improve the marketing system, Farmers' organizations have experimented the collective marketing of soybeans on the basis of contracts with oil mills such as FUPRO in Zou / Collines. This operation has not achieved significant success because of the influence of demand from Nigeria, which offers producers higher prices than the contracted price.

Two periods are distinguished in the soybean marketing campaign. A period of intense activity covers the months of November to February. During this period, the markets take place at the producers or in the nearest markets. Much of the production is delivered to Nigerian buyers and large processing units (oil mills and feed mills) which are themselves oriented towards the export of processed products. A period of

low activity during which transactions take place in communal and departmental markets for consumption and local processing.

The potential market for soy is partly national. The latter, consisting mainly of processing units (oil mills and feed mills), is not yet satisfied because of exports of grain soybeans to Nigeria so these units still constitute an important market to satisfy.

Burkina Faso and Mali are big demanders for roasted soybeans and therefore a market that could be more conquered. It is the same for soybean meal used in livestock feed and whose demand is very strong especially in Togo and Ghana.

Vegetarian and vegan restaurants are an important niche market for soy products such as cheese, yogurt, milk and mustard. These restaurants are found in major urban centers especially Cotonou, Calavi and Porto Novo. But there is also a certain category of supermarket customers who are very interested in these products and in the absence of local supply tend to consume imported products especially milk and yoghurt.

- ***Rice***

Locally produced rice is generally marketed in different markets and from neighborhood retailers. For the white rice produced locally, however, in recent years, efforts have been made to create some outlets installed or supported by local rice mills such as ESOP, CAFROP, CRR-MC, etc. Some cases of contracting are also noteworthy with distributors (supermarkets and supermarket) located in major cities such as Cotonou and Porto Novo. Regarding parboiled rice, it is increasingly present in supermarkets in Cotonou, Natitingou and Porto-Novo in particular. The parboiled rice market is fairly small at the local level, but fairly open to Nigeria.

The marketing axis for paddy rice is generally highly localized in large production areas or basins. However, flows to neighboring countries such as Nigeria, Togo and Burkina Faso are also observed in the field.

Markets at the national and sub-regional levels are powerful potential markets to conquer if efforts to improve the quality and presentation of locally produced rice are pursued.

- ***Vegetable products***

Market garden produce is usually marketed by shelf or at the edge of the field, especially for perishable products such as tomatoes and peppers. The majority of transactions between producers and traders are at the edge of the field (Singbo, 2012). As for the dried pepper that can be kept for a shorter or longer period, the transactions are rather off the field. Just after the harvest, the products are either sold directly to wholesalers who then deliver to the retailers or they buy from the producers at the edge of the field. Given the proximity of some production sites to consumers, they are sourcing directly from producers. In times of peak, part of the production is exported to countries in the subregion from the major production areas (IFAD, 2015). Thus, the production of the coastal zone (Cotonou, Podji, Podgi, Calavi, Ouidah and Grand Popo) feeds the markets of Togo, Nigeria and Ghana and the production of the northern zone (Atacora, Donga and Alibori) supplies Burkina -Faso, Niger and Nigeria. The functioning of cross-border market gardening products remains little known (IFAD, 2015).

Potential markets are the markets of the sub-region. Nigeria, Togo, Burkina Faso, Niger and Ghana. Benin's market garden products are already entering these markets, but the quantity remains low and the potential exists for a better positioning of Beninese products (IFAD, 2015). Niche markets are markets that have

requirements and which consumers are willing to pay premium prices. In terms of market gardening products, the niche markets mainly concern organic products and processed products, in particular pre-fried leaf vegetables. Consumers of organic products are concentrated in the country's major agglomerations (Cotonou, Abomey-Calavi, Parakou, Porto-Novo) and are looking for " healthy " products. These consumers are willing to pay a premium price of more than 50% for organic vegetables (cabbage and tomato for example) (Coulibaly et al., 2011).

• *Pineapple*

The majority (77%) of pineapple produced in Benin is consumed or exported fresh in the subregion and at the national level (Sohinto et al., 2008). The rest is valued by the growing local pineapple juice processing units (15%) and dried pineapple to the EU (around 8%) which are the two main products deviated from the pineapple produced in Benin. apart from syrup and pineapple jam. Less than 2% of the national production of fresh pineapple is also exported internationally (EU and Maghreb), while more than 35% of this same production is exported to the countries of the sub-region and mainly Nigeria (PSDSA, 2017). Regarding pineapple juice, in 5 hinterland markets to which Beninese juice is positioned, Niger, Burkina-Faso and Senegal top the list, and remain the most popular destinations. this juice, with respectively 40%, 32% and 18% of the volume of Beninese juice positioned on these markets. Thus, these three countries alone consume nearly 90% of the volume of Beninese pineapple produced. These countries are followed respectively by Nigeria (7%) and Mali (3%). But it must be emphasized that this trend analysis does not take into account the inestimable number of Beninese pineapple juice that crosses our country for neighboring Nigeria, as they often escape official statistics (Cosinus, 2016). Beninese pineapples are worthy of research both in the subregion and in European countries. The pineapple produced in Benin is recognized and highly priced for its quality, it only remains to strengthen its production and ensure traceability to increase its market share at sub-regional and international level. The main niche market for Beninese pineapple is that of export, particularly to the EU and the Maghreb. Efforts to meet the requirements of this market need to be further strengthened for better export volumes. The same is true for organic pineapple, the quantities of which are currently exported are very marginal.

• *Casava*

The domestic market is mainly driven by two categories of actors: fresh cassava traders and cassava byproducts. Fresh cassava marketed on the markets is intended for the consumption of local populations in nearby villages or urban centers. Through commercial transactions, some derivatives such as gari, tapioca, etc., are found in abundance in some marginal areas of cassava production, such as Cotonou, Malanville, Porto-Novo, Bohicon and Parakou. are big centers of consumption. The external market involves three categories of markets:

- the markets of neighboring countries (Nigeria, Niger and, incidentally, Burkina Faso),
- the markets of Central Africa (Gabon, Congo and Central African Republic) and
- the international market (Europe and North America).

Niger is the main outlet for the Gari of Benin with exports estimated at more than 20 000 tonnes a year, the equivalent of nearly 3 billion CFA francs a year. On this market are also sold cassava chips. The Nigerian market is importing fresh cassava from the border markets of Kétou, Adja-Ouèrè, Pobè, Lafoun and starch produced in artisanal units. The Central African country market is mainly home to gari and fluctuates significantly.

Increasingly, in large urban centers (Cotonou, Porto Novo, Calavi, Parakou, etc.), there is a demand for improved and well-presented cassava derivatives such as improved gari with coconut, pineapple, milk, Lafun etc. These products packaged in packages of 1 kg or 0.5 kg are often marketed in some supermarkets but could be made more accessible to consumers in other regions and even exported to countries in the sub-region that are already accustomed to other types of products. International exports mainly exploit the niche markets formed by the diaspora of the countries of West Africa, the Center in the countries of the North (Europe and North America). These exports are small amounts of improved gari. Unfortunately, statistics are not available on exported volumes.

• *Meat and small livestock*

There are 49 livestock markets of which 8 are in good condition where cattle can be sold (DE, 2015). The 63% of these markets are located in Northern Benin. Standing sheep / goats are sold either on livestock markets or markets created specifically for them (Cotonou zongo, Djéffa or Pehunco) or on a site set up or not in food markets (Tindji, Klékanmey, Azové, Abomey, Avakpa, etc.).

Products from small livestock, especially poultry, are available in traditional poultry markets. In general, these markets are integrated into ordinary markets. They constitute an entity of the ordinary markets of the cities and the countryside of Benin. They are usually led by women. They are managed by city hall agents in the context of decentralization. There are more than 100 poultry markets in all departments (FAO, 2015).

• *Aquaculture*

The domestic market is an important source of consumption of fish products, especially fish. But the poor productive capacity of the local fishery is a real challenge and more youths should invest in it. Apart from the current situation in the Nigerian market with the fall of the naira, the Nigerian market is also an important consumer market for clarias, especially fresh and smoked.

The fresh and large Tilapia is a product much sought after by the middle class and some restaurants of the place. Unfortunately, there is no statistical data on national demand. For the moment, much of this demand is satisfied by imports.

3.6.2. Trade constraints for young graduate agribusiness

The abusive harassment and road controls during cross-border transactions (IFAD, 2015), constitute trade barriers for the export of agricultural products. Formal export to Nigeria requires obtaining a certificate of origin and registration at the National Agency for Food and Drug Administration and Control (NAFDAC) that are not readily available and also constitute trade barriers (Agri Business Center, 2016).

Constraints to the exploitation of different markets for a young company

At the level of local and sub-regional markets, the major constraint for a young company is to be able to offer competitive prices to companies already installed. But an incubation period should allow the company's promoter to develop the strategies necessary to position oneself on the market.

3.6.3. Other Aspects Affecting the Performance of AVCS

According to the World Bank's Doing Business report, Benin has not seen any significant improvement in obtaining credit, having lost 5 places in relation to its 2016 level and occupying 134 ranking in 190 countries (World Bank, 2017a). This is reflected in the difficulties of accessing credit information, the absence or non-functioning of credit bureaus and the regulations on guarantees that are not conducive to access to credit (World Bank, 2017a). This situation is all the more pronounced for the agricultural sector, the uncertainties to which it is subject make bankers more skeptical of the loan agreement to actors in the sector. In addition, high interest rates and repayment deadlines are very similar to production activities.

The World Bank's report on Enabling the Business of Agriculture raises the regulatory framework that is not conducive to importing fertilizers. Indeed, for fertilizer registration procedures, obtaining import licenses and import permits are long and costly. This may justify, apart from cotton fertilizers, where the state is heavily involved, the low availability of specific fertilizers for other crops, particularly market gardening (World Bank, 2017b). In addition, the non-functioning of the variety approval committee does not favour the placing on the market of high-performance varieties that can increase production and meet the needs of consumers.

3.7. Analysis of Past Experiences in Youth Farm Business Creation

Various programs, projects and institutions have had to support youth in business development in the agriculture and agri-food sector. According to a study by UNCDF (2015) in Benin, there are nearly 30 institutions or government agencies involved in youth employment and entrepreneurship programs. Yet the number of youth-specific or youth-related policies is very low (UNCDF, 2015). According to the same author, the political environment in Benin is more early youth-friendly, but the lack of coordination among all institutions and agencies working on youth employment and entrepreneurship is a major problem. The main programs that have supported youth entrepreneurship over the past two decades include:

• *National Youth Policy*

Created in 2001 by the Ministry of Youth and Sports, the National Youth Policy covers a wide range of issues affecting all aspects of youths' lives, from sport to the environment and communication. These problems include economic participation and education. However, while the document includes a rich analysis of the situation of youths in Benin and a series of admirable principles, it does not include much concrete evidence on employment and entrepreneurship (UNCDF, 2015).

National Employment Plan (NEP): Developed by the Ministry of Microfinance and Youth and Women's Employment in 2012

This document describes a series of actions and initiatives aimed at generating employment by 2025 decent for every Beninese of working age. Although the policy does not identify youth employment as an area of interest, it indicates that it is among a number of cross-cutting issues that will receive special attention. The policy outlines the development of the private sector, creating better linkages between education / training and employment needs, and promoting self-employment as key issues to be addressed in youth employment.

Among the youth-specific actions described in the policy is the National Fund for the Promotion of Enterprise and Youth Employment (FNPEEJ). Established in 2007, the FNPEEJ aims to facilitate access to credit so that young graduates can start and develop a business. The FNPEEJ offers among other things a 6% interest rate loan to youths through a network of microfinance institutions.

The National Employment Agency (ANPE) is also mentioned in this policy. Created in 2003, ANPE's main role is to support the NEP by generating various employment indicators, by mobilizing and managing the financial resources needed to implement CIP programs, by creating synergies between the two countries. Job offer and demand and work readiness, etc. It also aims to collaborate with the FNPEEJ when it comes to youth and rural employment opportunities. ANPE offers jobseekers a number of programs such as an internship program, an independent work program and a technical capacity building program. In addition, it offers a training program to promote employment for local authorities. (UNCDF, 2015). Various pre-insertion and insertion programs are developed within the ANPE to help youths to gain access to salaried or independent employment. Among these programs, there is the program of Support to Independent Employment (PAEI) which allows the training, supervision and monitoring of young entrepreneurs with business creation projects; and the Job Applicants Empowerment Program (CRED) through which the ANPE works to provide skills training or advanced training or retraining to youths in the fields of agriculture, livestock farming, fishing, etc.

Despite all these efforts, the unemployment rate tends to increase with the level of education. In 2012, less than 20% of youths with no education or primary level were unemployed, while unemployment rates were 38.2% for youths with secondary education (UNCDF, 2015). In other words, youths with higher education tend to be unemployed. Various factors limit the ability of youths to start a business successfully. These factors include lack of access to financial products and services, their ability to build their skills, and the development of their personal and technical capabilities to start and run businesses. According to UNCDF (2015), in Benin, youths aged 15 to 35 are generally considered the most vulnerable segments and are less well served because of their supposed immaturity and poor preparation (lack of financial literacy)

In addition to these programs, which are mainly dedicated to supporting youths, some institutions specialized in providing support to the private sector also offer services to young entrepreneurs. Table 12 below presents the Beninese, Subregional and International Institutions of Financing and Support to the Private Sector.

Table 12. Beninese, sub regional and international institutions for private sector financing and support

Level	Types of organization	Institutions	Services provided	Target groups
National	Banks and Financial Institutions	BAIC, BABN, BIBE, BOA-Benin, BSIC-Benin, BGFI-Bank Benin, CBAO Benin, CCEI Bank Benin, Diamond Bank - Benin, Ecobank - Benin, Orabank - Benin, Société Générale des Banques au Benin (SGB), UBA Benign.	- Provision of banking services,	- Business promoters
			- Financing investment and consumption needs,	- SME / SMI
	Market institutions	ACTIBOURSE, BRVM	- Co-financing projects with microfinance institutions.	- Arrays
	Microfinance institutions	PAPME, PADME, VITAL FINANCE, FINADEV, DEVELOPMENT INITIATIVE, CFAD-BENIN, DAGBELI, ASSEF, 2-CM, DONGA WOMEN	- Negotiates securities,	- Individuals
Subregional Level	Supporting institutions	MICROFINANCE, ANFANI FINANCE, ALIDE MICROFINANCE, SIA NOON NGO, FIDEVIE, FECECAM, FENACREP, CHRISTIAN MUTUALITY, APPHED - NGO	- Accountability,	Public and private companies
	banks	ADEx, CNEX, CBCE, APIEx, PCB, TechnoServe Benin, FONAGA, ANPE, ABENOR, CENAPI, CCIB	- Manages portfolios under mandate	- Business promoters

Source : CIFI (2004)

4

CRITICAL ANALYSIS OF AGRIBUSINESS OPPORTUNITIES



4. Critical analysis of agribusiness opportunities

4.7. Innovative business opportunities in the agricultural sector

The agricultural sector is considered a mine of opportunities for youths. However, all the opportunities of the agricultural world are not promising and do not offer the same chance of success for youths. There are two main categories of business opportunities in the agricultural sector:

- **Traditional business opportunities:** These are usually the existing opportunities on which individuals and / or groups of individuals are already positioned and have been evolving for years. These opportunities offer the advantage of mastering the factors of production, and surf on a mature market or in strong development. However, they have the disadvantage of a competitive space, a reduced market share and a relatively limited entrepreneurial margin of manoeuvre. Business opportunities in this category include the representation, decentralization, scaling or relocation of an existing business or farm business.
- **Innovative business opportunities:** These are opportunities that are out the beaten track and offer goods and services that did not exist on the market so far. These opportunities have the advantage of a weak or non-existent competitive space, a wide if not market monopoly, a wide margin of entrepreneurial manoeuvre (price policy, growth). However, they present uncertainties related to the acceptance of goods and services, and to a market to be created or started. Due to the nature of innovative business ideas and the dynamics of the associated market, the level of competence, motivation and investment (Energy and capital) is greater.

The rest of this document will focus on the last category of agribusiness opportunities. A business opportunity in agriculture will be considered innovative if it meets certain conditions (see section appendix 2).

The seven major agricultural value chains offer many innovative business opportunities, some of which are specific to agricultural value chains and others across all agricultural value chains. These opportunities cover both the primary sector (primary production), secondary sectors (processing) and tertiary sectors (delivery services).

A priori these opportunities are graspable independently of each other. However, it is not excluded that youths put themselves in a logic of collaboration or vertical integration depending on whether the output of one can constitute the input of the other. Also, in certain cases, it is advisable that two or more youths pool their efforts and resources for the implementation of resources demanding opportunities (especially financial: case of projects with more than five million investment needs, such as the Aquaculture Engineering).

4.8. Major value chains specific opportunities

4.8.1. Business Opportunities on White Rice for the local market value chain

In recent years, rice has become one of the most consumed cereals in Benin, particularly in urban areas. The average amount of rice consumed per inhabitant per year is in the order of 25 to 30 kg (APRM 2011). Its local production is growing, particularly in agricultural development poles 1 (Niger Valley), 4 (Borgou Sud, Donga and Collines) and 5 (Zou and Couffo). Beninese consumers choose their rice mainly according to the cleanliness, the aroma and the perfume, the quality of the packaging and the low rate of broken rice. These preference criteria tend to favour imported rice over local rice. There is therefore a need to add value to local rice in order to improve its quality, its presentation (packaging) and therefore its competitiveness. There is already on the local market white rice conditions (Ex: Delice, Rivalop, Rice Nati, Rice Benin, Rice Sourou). Unfortunately, the quality of these rice is not standardized and the breakage rate remains very high (up to 35%). Local processing of rice is subject to several constraints including: poor access to appropriate processing technologies to ensure good quality rice, non-mastery of GMP (including drying, milling and packaging) increasing the risk of broken rice and reducing the rice's ability to preserve. Added to all this, there is an under-utilization of the nominal capacities installed at the level of the rice processing industrial units because of the difficulties related to the supply of paddy (bad condition of the tracks of deserts, high cost of transport). A mobile unit will not only bring appropriate technologies closer to producers, reduce costs of transporting paddy to industrial units, but also improve the current supply of good quality local rice. A mobile drying, machining and packaging unit is therefore a business opportunity for youths who can therefore set up a company that offers drying, milling and packaging services for white rice for the local market. . This service will guarantee standardization of milled rice and a low breakage rate.

Moreover, because of its strong penetration into the food habits of Beninese, rice, like corn could be used for the preparation of Aklui, a fermented porridge much appreciated by the Beninese population. The technology exists and is standardized. But it is not yet possible to source stabilized aklui from broken white rice on the local market. This is a need that stands as an innovative business opportunity for youths.

4.8.2. Business Opportunities on tomato and traditional leafy vegetable value chains

Market gardening, the main component of urban and peri-urban agriculture, is considered one of the most profitable subsectors in the agricultural world, due to short production cycles and a quick return on investment. It is expanding rapidly and supplies most of the vegetables consumed in major cities such as Cotonou, Porto Novo, Sèmè-Podji and Grand Popo. Market gardening, especially tomato production, uses imported seeds of dubious quality. Some market gardeners complain about the low germinability of imported seeds and damping-off. There is therefore a local need for quality tomato seed production. This is a business opportunity to be seized by youths.

Moreover, because of its high perishability, the tomato is usually transformed into powder or mash for easy preservation. However, processed tomato products (powder, puree) are available in continuous use formats, again posing a conservation problem. There is a real need to have these products sticks for unique uses, allowing households to bypass the difficulty of conservation. This innovative business opportunity can be seized by youths, especially women.

Finally, traditional leafy vegetables (e.g. Tchiayo) also offer a possibility of transformation into a food supplement or as fortifiers for food.

4.8.3. Business opportunities on meat value chains (ruminants and poultry)

Overall, the level of consumption of animal protein in Benin is well below the minimum standard recommended by FAO (9 kg against 20 kg). However due to population growth, the demand for animal protein is increasing. Meat supply is provided by beef (58%), poultry meat (21%), sheep / goats (13%) and pork (7%). Unlike pork whose meat is associated with religious prohibitions, sheep meat / goats and poultry enjoy a booming market with the possibility of offering new type products. The rearing of young goats (for goats), the supply of capon chicks and / or their rearing / rearing therefore remain innovative business opportunities for youths, especially in ADPs 1 and 2 for goats and 4, 6 and 7 for poultry.

4.2.4. Business opportunities on soybeans, mustard and soy yoghurt value chains

Soy is presented as a very promising speculation. Very rich in protein (40%), it has the key characteristics to serve as a source of protein of plant origin in a country of low protein consumption of animal origin. Soy is also described as a crop that improves soil fertility, thereby enhancing the sustainability of farms. For its qualities, the soybean has experienced a rapid boom with a production that has increased tenfold between 2010 and 2014. However, many challenges including, among others, the agronomic performance of farms Plant Clinic, production and supply in certified seeds. In recent years, the University of Abomey-Calavi (Laboratory of Microbial Ecology) has implemented soybean inoculum technology, which promotes the development of nodules in the roots and thus increases the fixation of nitrogen atmospheric, and therefore the yield. It also improves and maintains soil fertility. Although the innovation is very well accepted by producers, the inoculum is not available and accessible to producers. This problem is an innovative business opportunity for youths, who can position themselves for the production and marketing of the inoculum in formats easily usable by producers. In addition, the nutritional characteristics of soy offer business opportunities in the field of food processing. New type products such as yoghurt and soy mustard can be offered to enhance the qualities of soybeans.

Finally, the marketing of soy products is sparse and more or less restricted to rural areas. There is a real need to create specialized shops for the distribution of soy products, particularly in major consumption centers such as Cotonou, Porto-Novo, Abomey-Calavi, Parakou, etc.

4.2.5. Business opportunities on cassava flour and lafoun flour value chains

Cassava is part of the agricultural heritage of Benin. It is a staple in many communities in Benin and is the main product for making at least 23 traditional foods. Women are particularly specialized in cassava processing, operating individually or in associations. Cassava was presented as a wealth mine and treasure by the Roots and Tubers Development Program (PDRT) (2001-2008) and led to an increase in production. However, over the past decade, domestic production has been on a downward trend due to the lack of markets for the large quantities of cassava produced. Domestic consumption, cassava processing units in gari and tapioca, and the few cassava processing plants in alcohol, no longer manage to absorb cassava production. It had therefore become urgent to seek other uses for cassava to support the production effort and create wealth. For its qualities that make it a substitute for total or partial wheat flour, breadmaking cassava flour has become a serious business option for capturing the billions of dollars spent annually for importing wheat, which is largely re-exported to the United States. Nigeria. Cassava flour is used in the manufacture of bread and other specialties of the food industry, including biscuits and snacks. Demand for breadmaking flour comes from both Nigeria and Benin. Unfortunately, although the technology exists and is standardized, bakeries and pastry complain about the lack of availability and quality of breadmaking cassava flour on the market. This is a huge innovative business opportunity for youths who want to position themselves in this sector. They can to position themselves to produce cassava-based bread flour, and / or position themselves to produce and market biscuits, cakes, snacks and other pastry products from cassava flour. Significant improvement in the quality of Lafoun flour, a widely consumed cassava flour in South Benin and Nigeria. For example, there is a real business opportunity to produce Lafoun by using a microbial starter.

4.2.6. Business opportunities in the value chain of organic pineapple

Benin pineapple is very popular in the international market. Very soon, it will be the subject of a label for even more added value. The value chain of organic pineapple especially for the European market is in full development with a growing and sustained demand. It offers many business opportunities including the production of quality layer planting material for organic pineapple production. This opportunity will benefit from a booming market and a lack of a certified strain release system. The technology of production of stump planting material, especially the vitro-plants, exists. It is therefore a business opportunity to be seized by youths.

4.2.7. Business opportunities in the value chains of clarias, tilapia and shrimps

The fishery production in Benin is dominated by sea and continental fisheries and does not meet the growing national demand, largely supplied by imported products. Efforts to promote and popularize aquaculture, especially fish farming, have led to an increase in the number of fish farms in the country, particularly in the South. However, the production of farmed fish remains very marginal and estimated at 600 tonnes in 2013 (Rurangwa et al., 2014). This production is mainly oriented towards the production of Clarias (51%) and tilapia (47%) (MAEP-DPP 2011). The

aquaculture sector is indeed a mine of innovative business opportunities for youths because of the specific needs of the sector and the characteristics of the demand. The current development of the fish industry creates a demand for aquaculture engineering services for the construction and maintenance of livestock infrastructures (ponds, ponds, bins, etc.). This is a business opportunity for youths, who can position themselves to capture a service hitherto provided by unskilled workers, often with quality problems. In addition, many consumers are reluctant to consume clarias because of the darkness of their skin and their huge head. This eating behavior represents an innovative business opportunity for youths who can specialize in providing fresh clarias with head and skin removed. In addition, clarias headless and skinless offers a new innovative business opportunity including vacuum packaging, adding value to clarias smoked, which could be distributed in supermarkets. Also, for all farms in Benin, food is a big expense because pellets are usually imported. Locally formulated foods have had little success because of their low protein content and non-buoyancy. Research (past and ongoing) proposes new solutions, including new formulations and the use of live prey in fish feed. There are therefore two major innovative business opportunities, including the production of extruded composite feed for fish and the production of live prey (maggots, larvae) for the feeding of fish. Finally, apart from fish, Freshwater shrimp is also a huge innovative business opportunity. Domestic shrimp production comes almost entirely from sea fishing. With dwindling fisheries resources and increasing demand for fishing products, especially shrimp, it has become urgent to develop shrimp farming. This urgency is a business opportunity for youths, especially in the exploration of freshwater shrimp farming, which is technologically advanced. Table 13 shows some equipment available on the Beninese market for the agricultural processing of rice, cassava and soy.

Table 13. List of some equipment available on the Beninese market for the agricultural transformation of rice, cassava, soya

Types of equipment	suppliers	Affected opportunities
Roller milling machine	CEFACOM, BECRREMA, COMEXIS, YITWO, ADMA	- Mobile drying service, rice milling - Production of aklui made from broken white rice
Screw shredder	CAMEMEC, SUDARCOM, CTMG, CRTA, COBEMAG, CCMF, ADIMAS, AFAS, CEFACOM, PRODOGBO, BECRREMA, DENAKPO, MADI, Songhai, AGRITEC, YITWO, ADMA	
Calibrator	CEFACOM, CSMA, AGRITEC, YITWO	
Scale of 500kg of reach and Balance	YITWO	
steamer	CAMEMEC, URFMAN, HDG, BECRREMA, Songhai, ZOGO, TCMS, BGT	- Mobile drying service, rice milling
cleanser	AFAS, COMEXIS	
Optical sorter	ADMA	
Dryer	BECRREMA	
moisture	ADMA, ASBD	

Sorter-cleaner	URFMAN, CRTA, CCMF, ALA & Sylva, KRONE & CO, BECRREMA, CEFACOM, Songhai, AGRITEC, COMEXIS, ADMA	
heat sealer	ASBD	
Crusher-épépineuse	URFMAN / PTAA, ZOGO, BECRREMA	- Aklui production from broken white rice - Production of tomato powder in sticks of 50, 100 g for the local market - Soy mustard broth manufacturing for the local market
Concentrator	URFMAN / PWWS	
homogenizer	ZOGO	
Manual filling machine	BECCRREMA	-
Dosing-filling machine	ZOGO, BECCRREMA	-
Condiment mill	PKD, Ets MBS, CSMA, CAMEMEC, GFMA, CIRABI, Ets TOTACOM, Ets OSSA, ATCMB, URFMAN / PTAA, HDG, SOUDARCOM, CRTA, CTMG, Alafia Complex, COBEMAG, CCMF, SOCOME, ADIMAS, AFAS, ORAISON, CEFACOM, ATCOM, CTMC, Prodogbo, ALA & Sylva, KRONE & CO, BECCRREMA, FMB, TCMS, DENAKPO, GECSI, Enagnon	- Production of tomatoes powder
Solar dryer	URFMAN / PTAA, AFAS, BECCRREMA, ASBD	- Manufacture of enriched soy yogurt - Tomato powder production, - Manufacture of enriched soy yogurt, - Production of bread flour made from cassava,
Gas dryer	BECCRREMA	
Gého dryer	BGT	
Maxicoq dryer	BGT, Songhai	
pasteuriceer	URFMAN / PWWS,	- Lafoun production stabilized
Sewing machine	ADMA	- Tomato powder production,
Motoriceed grater	Songhai	- Production of food supplements based on traditional leafy vegetables, - Soy mustard broth manufacturing - Tomato powder production,
Double screw press	Songhai	
Fermentation tray	Songhai	

Source: CTB (2016)

4.9. Cross-sectoral opportunities

4.9.1. Training and coaching of farmers

Contrary to the preconceived idea, agriculture and especially market agriculture requires technical skills. Very few farmers have those essential skills needed for the development of their farms. There are more and more farmers who call on agronomists, especially specialized fora (i.e. Agronomists forum, Agrihub) on specific problems of their exploitation, and offer to pay for the service. This need represents an innovative business opportunity for youths who can develop training and coaching services for farmers.

4.3.2. Mobile Phytosanitary Service "Mobile Clinic" for plants and mobile veterinary services for animals

The fight against predatory and destructive pests of crops and animals is an important step in the technical route of production or breeding. In some cases, it represents a major component of production and weighs on the cost of production. Producers, particularly market gardeners and breeders, often complain about the unavailability of crop or veterinary products specific to

speculations and animals. Moreover, because of their limited knowledge of prophylaxis of the flat and animals, misdiagnosis and over dosage are often observed, leading to inefficient treatment and in some cases toxicity problems. It is then possible for youths to offer two rather innovative services "mobile clinic for plants" and "mobile clinic for animals".

4.3.3. Repackaging and marketing of agricultural inputs (fertilizer) in small volume packages.

This activity of repackaging and sale of agricultural inputs including fertilizers already exists but is done informally. In low landlocked areas where the area planted is relatively small, producers sometimes help each other by selling part of their agricultural inputs that would not have been used for production. Indeed, most producers often do not need to buy the entire 50 kg fertilizer bag or bag / sack etc. to ensure their production. This is an opportunity for agribusiness that youths can seize by adapting the supply of agricultural inputs to the needs of producers.

4.3.4. Home delivery service for agricultural and agri-food products

For time constraints, some consumers prefer imported and packaged agricultural products (canned tomatoes, frozen chickens, meat, etc.) to fresh local products, whether or not they are packaged. With the new trend in the middle class returning to fresh local produce, there is a real market for agricultural and agri-food products. There is therefore an opportunity to seize especially in the provision of home delivery service of agricultural and agri-food products, fresh, packaged and ready to use.

4.3.5. Agribusiness brokerage

In Benin, there is a gap between the production, processing and consumption segments, resulting in unsold or sold harvests, processing units without raw materials and consumers without products. There is therefore a real need to link actors from different segments of value chains to streamline the flow of products for further wealth creation. This opportunity can be seized by youths to offer a brokerage service not only to link the supply and demand of agricultural and agri-food products, but also to put farmers (producers and processors) in relation with private investors.

4.3.6. Training, Implementation of quality approach and intermediation for organic certification.

With the awareness of the harmful effects of chemicals in the agricultural sector (including crop, animal and fish production), there has recently been a return to naturalness and the consumption of ecological and biological products. The market for organic products in Europe, Africa and Benin is growing. For farmers (producers and processors) who want to capture the opportunities of this market, there are a number of standards and traceability requirements to be met. Producers are often unaware of the procedure and lack the skills and time to conduct the procedures. There is also at this level an innovative business opportunity for youths who can position themselves to support producers / Transformers in the process of organic certification.

Major sectors	Major AVC	Innovative business opportunities	ADP						
			1	2	3	4	5	6	7
Rice	White rice	Mobile service of drying, machining and packaging of white rice							
	White rice	Stabilized aklui production from broken white rice							
Market garden products	Fruit tomato	Production of quality tomato seeds							
	Dried tomato	Production of tomato powder in sticks of 50, 100 g for the local market							
	Traditional leaf vegetables	Production and marketing of food supplements based on traditional leafy vegetables for the local market							
Meat	Fresh meat (ruminant)	Production of young goats / mixed-billed goats							
	Fresh meat (poultry)	Production of castrated chicks (capon)							
Soy	Grain soy	Production and marketing of soy inoculum							
	Soy mustard	Soy mustard broth manufacturing for the local market							
	Soy yogurt	Manufacture of enriched yoghurt for nutritional recovery centers							
		Creation of a specialized shop selling soy products							
Cassava	Breadmaking cassava flour	Bread flour production made from cassava							
	Breadmaking cassava flour	Production and marketing of biscuits, cakes, snacks and other pastry products from cassava flour							
	Lafoun	Lafoun production using a microbial starter for the Nigerian market							
Pineapple	Organic pineapple	Production of quality organic pineapple discards for the European market							
fish farming	Fresh clarias	Transformation of Clarias "Clarias skinless and headless"							
	Clarias smoked /	Packaging of vacuum-packed clarias							
	Tilapia and fresh clarias	Extruded compound feed production for tilapia feed							
	Tilapia and fresh clarias	Aquaculture Engineering Service							
	Tilapia and fresh clarias	Production of live prey (maggots, larvae, artemia) for tilapia feed for the local and regional market							
	shrimps	Freshwater shrimp production for the local market							
All sectors combined		Training and coaching of farmers							
		Mobile Phytosanitary Service "Mobile clinic" for plants							
		Mobile Veterinary Service "Mobile clinic" for animals							
		Repackaging and marketing of agricultural inputs (fertilizer) in small volume packages							
		Home delivery service of agricultural products							
		Commercial brokerage							
		Training, Implementation of quality approach and intermediation for organic certification							
		E- shop (online store) for the distribution of agricultural and agri-food products							

4.9.2. E- shop (online store) for the distribution of agricultural and agri-food products

With the digital revolution, new information and communication technologies can bring added value to the agricultural sector in several dimensions, including e-commerce of agricultural and agri-food products. The penetration of the mobile phone and the internet has created a new type of market, still largely unexploited in Benin, particularly for the distribution of agricultural and agri-food products. Youths can exploit the opportunities of this market by developing e-shop platforms to bring agricultural and agri-food products from producers / processors online.

4.10. Youths' vision on agricultural entrepreneurship

4.4.1. Different categories of studied youths

This study distinguished five (5) youths' groups with contrasting entrepreneurial characteristics and visions.

Table 14. Youth categories and their agribusiness visions

Youths categories	Characteristics	Vision for agribusiness
Youths in graduation	These are youths in training at Benin universities including FSA and EPAC. They are mostly single, aged between 20 and 25, and generally do not have access to productive resources (land, financing).	Most of these youths recognize that agribusiness is a good opportunity that youths can seize to ensure their financial autonomy especially in the current context where unemployment is galloping. However, they emphasize the need to combine scientific research (innovative research results) with agribusiness.
Young graduates with no permanent job	These are youths between the ages of 25 and 35, the majority of whom work in seasonal or part-time jobs that are often unrelated to their basic training.	The majority think to undertake in the vegetable production or the small breeding after their formation.
Youths being in agribusiness successfully	They are single or married and generally do not have access to productive resources (land, finance).	These youths are mostly pessimistic about agribusiness. They see a lot of demotivating constraints. However, some show a willingness to undertake, but they point out the difficulties in accessing the financial resources needed to start their projects.
Youths who have failed agrobusiness	These are youths between the ages of 25 and 35 who have been successful in farming and whose businesses are still working after a number of years. They emphasize the need to be independent and not dependent on an employer. These youths generally have access to land but the majority do not receive credit for agribusiness activities.	This category of youths determined enough to prove that agribusiness is a good opportunity that the young can seize to ensure its financial autonomy and realize his dreams.

Youths categories	Characteristics	Vision for agribusiness
Incubated UAC Foundation	They are youths from 25 to 35 years old and married for the most part. They usually have access to land but the majority do not receive credit for agribusiness activities.	Most of them are in vegetable production, small livestock (layers, small ruminants, pigs) and processing of agricultural products.

4.4.2. Agribusiness success conditions and constraints for youths

The major constraints facing the agricultural entrepreneur in Benin according to the studied youths are:

- Lack of funding, considered the main constraint according to youths
- Lack of land capital
- Academic training not very motivating for entrepreneurship
- Difficulties in the formalization of the company (a lot of paperwork)
- Taxes imposed on the company do not motivate youths
- Customs barriers that make it difficult to export products
- Climatic hazards
- Unavailability and high cost of agricultural labor
- Social pressure, particularly by relatives and parents. Agricultural entrepreneurship for a university graduate is poorly appreciated by a part of society (especially parents who are not educated).
- The fear of failure.

During the exchanges with the various categories of youths, a particular accent was put on the favourable conditions which could favour the success of the agribusiness by the youths in Benin. The data collected is as follows:

- Create insurance structures for farms
- Create structures to financially support in the first year youths who want to undertake
- Reducing administrative formalities for the creation of an agricultural enterprise
- Limit the import
- Facilitate the export of products from agribusiness companies
- Reorganize the price of food on the market
- Exonerate agribusiness companies from taxes
- Have a good foundation in marketing
- Ensure the availability of adequate materials and inputs.

4.11. Techno-economic analysis of agribusiness opportunities for youths along agricultural AVCs

4.11.1. Stabilized aklui production from broken white rice

In Benin, unlike some West African countries such as Senegal and The Gambia, broken rice (broken rice) is considered to be a rice-processing by-product with very low market shares. They are usually sold off or used for the production of products such as Ablo. However, the analysis of the physicochemical, organoleptic and technological characteristics of broken rice showed that they could be valorized for the production of Aklui, a Benin porridge consumed at breakfast traditionally prepared



with fermented corn flour, granulated and dried. If other cereals such as sorghum, millet etc. have been valued in this form and are very well accepted by consumers, rice has hardly been valued in Benin yet. Yet demand for Aklui on the local and regional market is experiencing growth that is difficult to be satisfied by the current supply. In order to satisfy this demand and in a logic of diversification of the product range used for the production of the "Aklui" porridge, the establishment of a specialized unit for the production of stabilized aklui based on broken white rice would be an innovative business opportunity for a young person wishing to invest in agribusiness. Boxes 1 and 2 present the technical and economic requirements of this agribusiness opportunity.

Box 1: Technical analysis of a stabilized aklui production unit based on broken rice

From the technical point of view, the establishment of a stabilized aklui production unit based on broken white rice requires some basic technical skills. It is desirable that the young person wishing to seize this opportunity can have a basic university education in Food Science and Technology Food Level BAC + 3 or more and have basic concepts on post-harvest rice technology. Knowledge of industrial mechanics or equipment maintenance will be an asset. Otherwise, it may associate or recruit specialized technicians in food processing (DEAT level) and industrial mechanics or agricultural machinery (DTI level) for the maintenance of equipment and monitoring of processing operations. Depending on the size of the unit, it will also be possible to use manpower specifically for packaging and handling activities. To perform this service professionally, he will also have to reinforce these capacities in business management, marketing and communication.

Because the quality of the finished product (granulometry, texture) depends on the quality of the raw material (grain moisture content, homogeneity of variety), it is preferable for the company to obtain paddy rice from producers. And has within it a rice milling line. Collecting everything from broken rice exposes the entrepreneur to a risk of heterogeneity of the raw material which does not guarantee an optimal quality of his finished product. Also, this will help secure the supply of raw material. However, in a logic of minimizing the costs related to this type of investment, the entrepreneur can outsource this service on the basis of specifications defining the technical specifications of its raw material or associate with other companies who will specialize in the production of broken white rice (collaborative venture). In terms of investment, the establishment of the Aklui production unit based on broken rice will require the acquisition of a sorter, a huller, a polisher, a scale, a thermo -solder and construction of the building to house the equipment, and a storage warehouse.

In addition, the contractor must ensure the availability of electrical energy or design an autonomous energy supply system (PV, gasification system).

Since the yield and quality of the finished product depend on the moisture content of the milled grains (ideally 14%), special attention must be given to the quality (moisture content) of the paddy upstream. The contractor must therefore have adequate equipment for sampling and measuring humidity and, if possible, provide drying air for non-compliant grain.

In order to limit transport costs, it is recommended to install such a unit near potential sources of raw material supply.

Box 2: Economic analysis of a stabilized aklui production unit based on broken rice

The establishment of a stabilized aklui production unit based on broken white rice requires an initial investment estimated at 6,300,000 FCFA for the purchase of equipment, construction of buildings and related infrastructure (drying area) and to create a working capital (BFR).

The structure of the five-year operating account can be as follows

Basic assumptions:

Machining yield: 67% Annual production: 25t / year or 100 thousand 250g sachets

Unit selling price: 250FCFA

Forecast operating account

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	25000000	25000000	25000000	25000000	25000000	125000000
2) Intermediate consumption	16110000	16110000	16110000	16110000	16110000	80560000
3) Value added (3) = (1) - (2)	8887500	8887500	8887500	8887500	8887500	44437500
4) Charges	5448000	5448000	5448000	5448000	5448000	27240000
5) Gross operating surplus (5) = (3) - (4)	3439500	3439500	3439500	3439500	3439500	17197500
6) Financial expenses and amortization	996040	996040	996040	996040	996040	4980200
7) Net Result Accounting (7) = (5) - (6)	2443460	2443460	2443460	2443460	2443460	12217300
8) Net Cash Flow (8) = (7) + Depreciation	3308460	3308460	3308460	3308460	3308460	16542300
9) Accumulated net cash flow	3308460	6616920	9925380	13233840	16542300	16542300

4.11.2. Establishment of a seed production farm for urban and peri-urban agriculture

Quality seeds highly contribute to crop yield. However, producers find it extremely difficult to



Source https://www.espaceagro.com/semence-graine-plant/semences_fongicide-et-engrais-

access quality seeds, particularly for traditional vegetables. For now, the distributors installed in the territory provide the seeds of exotic speculations such as carrot, lettuce, and some varieties of tomato, watermelon and pepper. The need for quality seeds, however, is not covered by these imports. To make up for this deficit, market gardeners either produce their own seed or they buy from their pairs or buy their supplies in neighboring countries. These seeds are not subject to certification and are sold in shops or in bulk on the markets and the guarantee of their quality (germination rate is often very low) is not ensured. The

market for garden seeds exists and youth may set up their businesses by focusing especially on

tomato seeds, pepper, leafy vegetables. The technical and economic analyzes are presented in boxes 3 and 4.

Box 3: Technical Analysis of a Market Garden Seed Farm

Seed production is an activity that requires high technicality. To do this, graduates with a minimum level of education BAC + 3 in plant production have a base that can allow them to better perform this activity. However, they must undergo additional training with special emphasis on seed planning, production, processing and marketing. Given its expertise in the production and marketing of market gardening seeds, the Laboratory of Genetics, Biotechnologies and Seeds of the Faculty of Agricultural Sciences could be involved in this capacity building. This laboratory could also support young people in obtaining first-generation seeds (pre-base and base). Because each species has its specificities in seed production, young people must learn about the species they will have to choose and become familiar with the technical regulations of production and the process of quality control and certification. The seed production documentation for market gardening is available on the AVRDC website (<http://avrdc.org/>). In addition, to be recognized as seed producers, they must register with the Quality Promotion and Product Packaging Service (SPQC) to obtain their professional card.

In addition to skills directly related to seed production, youth will need to build their capacity in developing and implementing business plans, business management, marketing and communication strategies to better develop their entrepreneurial culture.

To give more visibility to their activity, young people could use the marketing and seed purchase platform developed by CORAF (<http://www.wasix.net/>).

Some essential equipment for the treatment of vegetable seeds are buckets for fermentation, hand pillars (with a handle), a wet separator of vegetable seeds and sieves and strainers for seed cleaning. The seeds can be packaged in packaging such as bags, bags, boxes of various materials such as cotton, paper.

Box 4: Economic Analysis of a Market Garden Seed Farm

The seed production of these vegetable crops requires an initial investment for the purchase of basic seeds and other inputs (fertilizers, phytosanitary products), construction of drying area, storage warehouse, land acquisition and installation of irrigation system, drying area, purchase of scales for weighing. The example of the tomato was taken to make the economic analysis on 4000 m². Young people who want to get involved in this activity will have to use a loan to finance the initial investments. The cost structure for the production and marketing of soybeans over three to five years can be as follows:

Operating account

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	2400000	4800000	6000000	6000000	6000000	25200000
2) Intermediate consumption	1470000	1350000	1350000	1350000	1350000	6870000
3) Added value	930000	3450000	4650000	4650000	4650000	18330000
4) Charges	2000000	2050000	2050000	2050000	2050000	10200000
5) Gross operating surplus	-1070000	1400000	2600000	2600000	2600000	8130000
6) Financial expenses and amortization	1194600	1194600	1194600	1194600	1194600	5973000
7) Net Result Accounting	-2264600	205400	1405400	1405400	1405400	2157000
8) Net Cash Flow (8) = (7) + Depreciation	-2054600	415400	1615400	1615400	1615400	3207000
9) Accumulated net cash flow	-2054600	-	-23800	1591600	3207000	
		1639200				

Source: Consultant estimates based on information collected

The production of market garden seeds would be profitable from the second year with a net book profit of 205 400 FCFA which passes to 1 405 400 FCFA in the third year.

4.11.3. Production of mixed-breed kids

The production of mixed-breed kids is a production based on selection and genetic crosses. In Benin, there are two local breeds: the Sahelian, high on legs whose adult weight varies between 25-35 kg; the djallonké whose adult weight is 20Kg. A new breed has been introduced recently. This is the Alpine breed whose weight in adulthood can reach 80 to 100 kg for the male and 50 to 70 kg for the female. Crossings can be done between our local and alpine breeds to improve their performances. There are specimens from various first-generation crosses throughout the country. These cruises are made by the breeders themselves. But there is no information on the performance of the latter. In addition, breeders do not know that these products exist and obtain their breeding stock in the livestock markets or from their peers. Also, importing other exotic breeds could be beneficial to improve the performance of our breeds. A specialized company in the production of crossbred kids of known performance is an innovation in the field of livestock farming in Benin and a good basis for the development of small ruminant farming and ricochet in the production of meat in the country. This company is a real opportunity for youths wishing to undertake agricultural business. The boxes below present the technical and economic requirements of this agribusiness opportunity.



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Box 5: Technical and Economic Analysis of a mixed-breed kids' production

Technical analysis

The success of a mixed-breed kids' business is a good mastery of animal genetics, reproduction and animal health. It is therefore essential that young people join together to create such an enterprise. Three young people with a minimum level of education (level BAC + 5) in animal breeding, animal breeding, animal reproduction and animal health (a veterinarian would be suitable) can associate and recruit a technician in animal production (with a diploma of Tropical Agricultural Studies option animal production) to help them in the conduct of animal breeding.

The establishment of the company requires the construction of the livestock building, offices, storage room for livestock equipment and a conservation room of monitoring records breeding. The company must have ear tags to mark animals, animal tracking cards, birth records, mortalities, selection, calving, sale of livestock and office equipment. They will also need livestock equipment and animal treatment products (water troughs, feeders, vitamins, de-wetting, water and electricity supply, generator, sheets, etc.). The computer equipment is essential to take stock of the data recorded in the notebooks. Mixed kids sold must be accompanied by a document providing information on the age of the animal and the performance of the breed.

Economic analysis

Before the installation of such a company, it is essential that young people already have a specimen of the breed to sell with the performances. So, a research phase is important. The selection can always continue. The latter will have to invest 4,055,000 FCFA the first year. The structure of the five-year operating account can be as follows:

Basic assumptions:

Annual production 80, 120, 160 and 220 kids the 1st, 2nd, 3rd and the other years respectively.

Sale price: 30000FCFA kid or goat, 500 FCFA per liter of milk.

	Year					Total
	1	2	3	4	5	
1) Turnover	2900000	4300000	5700000	7700000	7700000	28300000
2) Intermediate consumption	2 530 000	480 000	385 000	425 000	400 000	4220000
3) Added value	370 000	3 820 000	5 315 000	7 275 000	7 300 000	24080000
4) Charges	3600000	3600000	4000000	4000000	4500000	19700000
5) Gross operating surplus	-3 230 000	220 000	1 315 000	3 275 000	2 800 000	4380000
6) Financial expenses and amortization	363591,7	1563591,3	1563591,3	1563591,3	1563591,3	6617957
7) Net Result Accounting	-3 593 592	-1 343 591	-248 591	1 711 409	1 236 409	-2237957
8) Net Cash Flow (8) = (7) + Depreciation	-3 371 925	78 075	1 173 075	3 133 075	2 658 075	3670375
9) Accumulated net cash flow	-3 371 925	-3 293 850	-2 120 775	1 012 300	3 670 375	-4103875

Source : Consultant estimates based on information collected

4.11.4. Production of castrated chicks (capon)

The production of capons makes it possible to obtain larger animals having a meat of better organoleptic quality compared to the non-castrated rooster, traditional chicken. The castration of the cockerels is not easy as in the case of the ruminants as it requires a high-risk surgery. This difficult intervention giving rise to losses causes few breeders to produce capon, a product much in demand by connoisseurs. So it would be an



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opportunity for youths to provide breeders interested in producing capon castrated chicks. Indeed, this company is like a lung for the development of the production of capons because without castrated chicks, no capons. The following boxes present the technical and economic requirements of this agribusiness



opportunity.

Box 6: Technical analysis of a castrated chick production farm

The castration of chicks is the crux of this enterprise, it is essential that the young person who undertakes such activity should have basic technical skills. He must be a veterinary trainer (BAC + 5) or be a zootechnician with a minimum university level (at least BAC + 3) in animal production who has completed training in animal health. It is essential that the latter has a good control of the anatomy of the rooster to limit the rate of loss of chicks during castration. In the same way, some notions in animal health will make it possible to face the post-operative complications and to identify the healthy chicks during the purchase on the market. The control of animal husbandry is an asset to follow these well to provide chicks in good condition. Since any intervention requires assistance, two young people with the aforementioned training could associate together for the creation of the company. They will be able to recruit a technician in animal production (with a Diploma of Tropical Agricultural Studies option animal production) to help them in the management of rearing chicks.

The breeding building must include an acclimation room or isolation of purchased chicks, an operating room, a preoperative room, a postoperative room to track castrated animals to detect postoperative complications and a room for surgery. Breeding. The young must have necessarily a suitable equipment for the operation: a surgical scalpel or scalpel, a retractor with a locking clip, a clip forceps with serrated round tip, surgical staples or solid sewing thread with a curved needle, a pair of scissors; small compresses, saline, a disinfectant (dakin, betadine etc.), a clean metal box to store the material. The company must have equipment for breeding and treating animals (drinking troughs, feeders, vitamins, de-wetting, antibiotics, anti-inflammatories, water and electricity supply system, a generator, table cloths operation, cuvettes ...). Computer and office tools / hardware will also be used.

To have a good standard of this product on the market, young people who seize this opportunity will have to deliver the chicks in boxes adapted for the transport of the animals with a badge of the company and information on the nature of the product (variety of the cock, age at castration average weight of a chick). A document will have to be given to the buyer on the origin of the chicks, the total success rate of the castration of the chicks sold, the minimum duration of breeding and some indications on the adapted feeding for the breeding of the capon. The company must also have an authorization / approval that formalizes its activities.

Box 7: Economic analysis of a castrated chick production farm

Like any project, the young people who will seize this opportunity will have to find a starting funding of 5741000 FCFA to support them for the purchase of the equipment of operation, the building of the breeding building and other expenses related to the implementation place of the structure and its registration and operation. The structure of the five-year operating account can be as follows

Basic assumptions: Annual production: 1200, 1800 and 2400 castrated chicks the 1st, 2nd and the other years respectively. Sale price: 3000 FCFA castrated chick and 2000 FCFA bag 50 kg droppings

Forecast operating account

	Year					Total
	1	2	3	4	5	
1) Turnover	2900000	4300000	5700000	7700000	7700000	28300000
2) Intermediate consumption	2 530 000	480 000	385 000	425 000	400 000	4220000
3) Added value	370 000	3 820 000	5 315 000	7 275 000	7 300 000	24080000
4) Charges	3600000	3600000	4000000	4000000	4500000	19700000
5) Gross operating surplus	-3 230 000	220 000	1 315 000	3 275 000	2 800 000	4380000
6) Financial expenses and amortization	363591,7	1563591,3	1563591,3	1563591,3	1563591,3	6617957
7) Net Result Accounting	-3 593 592	-1 343 591	-248 591	1 711 409	1 236 409	-2237957
8) Net Cash-Flow (8) = (7) + Depreciation	-3 371 925	78 075	1 173 075	3 133 075	2 658 075	3670375
9) Accumulated net cash-flow	-3 371 925	-3 293 850	-2 120 775	1 012 300	3 670 375	-4103875

Source: Consultant estimates based on information collected

The production of castrated chicks would be profitable from the 4th year with a net result of 1711409 FCFA Up from the third year.

4.5.5. Production and marketing of soybean seeds

The use of certified seeds remains marginal, particularly because of weak connections between seed producers and producers and the unavailability of basic seeds. Soybean seeds, although pure, offer the advantage to seed production units. In fact, soybeans quickly lose their germinated supply if they are not properly stored, forcing producers to renew their seed more frequently. Thus, the establishment of seed production units is an opportunity for young graduates. A partnership between the seed production units and the inoculum production units (the FSA Microbial Ecology



Laboratory) would facilitate the sale of seeds. Indeed, the inoculum is successfully penetrating the market, but producers will only be able to benefit from its potential by combining its use with quality seeds. Economic Analysis Reveals Installation of Certified Soybean Seed Production Facility requires an initial investment of 5845000 FCFA. The activity would be profitable from the third year with a net accounting result of 1927900

FCFA. The technical analysis is presented in Box 8 and the operating account is presented in Box 9.

Box 8: Technical analysis of a soybean seed production and marketing unit

Seed production is an activity that requires high technicality. To do this, graduates with a minimum level of education BAC + 3 in plant production have a base that can allow them to better perform this activity. However, they must undergo additional training with special emphasis on seed planning, production, processing and marketing. One of the major constraints for soybean seed production is the rapid loss of germinability related to harvesting and storage conditions. To overcome this, you need good planning. Thus, it is preferable to produce in the off-season (sowing in January, February and harvest in April, May) to limit the shelf life. In addition, to be recognized as seed producers, they must register with the Quality Promotion and Product Packaging Service (SPQC) to obtain their professional card.

In addition to the skills directly related to seed production, young people will benefit from capacity building in developing and implementing business plans, business management, marketing and communication strategies to better manage their business and better understand the environment in which they operate and better position themselves in the market.

To properly conduct soybean seed production, it requires a drying area, jute bags for storage, packaging in attractive packaging, a storage warehouse with pillars. The hygrometer is required for controlling the moisture content of seeds. Petri dishes are also necessary for the efficient conduct of germination test.

To give more visibility to their activity, young people could use the marketing and seed purchase platform developed by CORAF (<http://www.wasix.net/>).

4.5.6. Production of cassava-based bread flour

The Benin bakery sector, which is heavily dependent on wheat for the production of bread and other baked goods, has been idling for some years because of the soaring price of wheat flour, thus causing an increase in the price of products based on wheat. of wheat. Despite the existence of an alternative technological solution such as the use of cassava flour and other local flours as

a substitute for wheat flour, the adoption of a decree authorizing the incorporation of cassava flour for the production of bread and the erection of cassava as a target sector of various agricultural policies, bakers and confectioners are struggling to cope with this problem. In the absence of a local supply of cassava flour of comparable physical quality to that of wheat, bakers in order to improve their turnover make use of flours and products of dubious quality thus exposing consumers to health risks.



To date, no Beninese company exploits this opportunity. The proximity of Nigeria, a major proponent of this product (97,000 t / year, of which only 19% are satisfied) constitutes an additional motivation factor that can orient a young person to

invest in this sector. The following boxes present the technical and economic requirements of this agribusiness opportunity.

Box 9: Economic Analysis Production and marketing of soybean seeds

The production of soybean seeds requires an initial investment for the purchase of basic seed, fertilizer and inoculum, construction of drying area, storage warehouse, land acquisition and plant installation. Irrigation system and purchase of scales for weighing. Young people who want to get involved in this activity will have to use a loan to finance the initial investments. The analysis is based on the assumption that the first year, the second and the remaining years (4 and 5), the seed will produce respectively on 1 ha, 2ha and 4 ha. The cost structure for the production and marketing of soybeans for the first five years can be as follows:

Wording	Operating account					Total
	1	2	3	4	5	
1) Turnover	1500000	3000000	6000000	6000000	6000000	22500000
2) Intermediate consumption	1545000	1300000	1450000	1450000	1500000	7245000
3) Added value	-45000	1700000	4550000	4550000	4500000	15255000
4) Charges	1300000	1375000	1310000	1310000	1310000	6605000
5) Gross operating surplus	-1345000	325000	3240000	3240000	3190000	8650000
6) Financial expenses and amortization	1312100	1312100	1312100	1312100	1312100	6560500
7) Net Result Accounting	-2657100	-987100	1927900	1927900	1877900	2089500
8) Net cash flow	-2397100	-727100	2187900	2187900	2137900	3389500
9) Accumulated net cash flow	-2397100	-3124200	-936300	1251600	3389500	

Box 10: Technical analysis of a cassava flour production unit

From the technical point of view, the establishment of a cassava-based flour production unit requires some basic technical skills in agri-food transboundary processing. It is hoped that the young person wishing to seize this opportunity can have a basic university education in Food Science and Agricultural Technologies level BAC + 3 or higher. Failing this, he may associate or recruit a technician specializing in agri-food processing (DEAT level) to monitor processing operations. Depending on the size of its unit, it may also use labor specifically for packaging and handling activities. To practice this service professionally, he will have to reinforce these capacities in business management, marketing and communication. Technology training materials exist to inform it on bread flour technology (https://publications.cta.int/media/publications/downloads/1469_full_text_smaller.pdf, <http://usaid.coraf.org/documents/manioc.pdf>).

The specifications and information needed to produce a high-quality cassava flour marketable in the Beninese market are described in Benin NB 03.06.006.

In order to guarantee a regular supply of quality cassava root, the young entrepreneur will have to contract with individual cassava farms or producers and develop loyalty mechanisms (pre-financing of production, supply of a premium). In the long term, he will also have to think about ensuring autonomy in supplying his unit with cassava so as to prevent any shortages. The establishment of a breadmaking flour production unit of cassava requires the acquisition of a mill (wet mill), a hammer mill equipped with a cyclone, a hydraulic press, a dryer (solar, cabinet or flash), balance, sewing machine and building construction to house equipment, a storage shop. It is advisable to compartmentalize the transformation room so as to separate the wet section from the dry section.

In addition, the contractor must ensure the availability of electrical energy or design an autonomous energy supply system (PV, gasification system). Depending on the size of the unit, it will be possible to use manpower specifically for peeling, packaging and handling activities. Because the yield and quality of the finished product depends on the variety of cassava used, the state of maturity, the promoter must ensure that the cassava roots used comply with the standards. The varieties of cassava most suitable for the production of breadmaking flour are the healthy varieties BEN 86.052 and RB 89.509 of 12 months of freshly harvested maturity. In order to limit transport costs, it is recommended to install such a unit near potential sources of raw material supply.

Box 11: Economic analysis of a cassava flour production unit

The establishment of a high-quality cassava flour production unit requires an initial investment estimated at 9,000,000 FCFA for the purchase of equipment, the construction of buildings and related infrastructure (reception and peeling area) and to create working capital (BFR).

The structure of the five-year operating account can be as follows:

Basic assumptions:

Quantity of fresh cassava to process: 2,6t / day or 1 tarpaulin Yield: 25%

Average annual production: 100t / year or 2000 bags pp of 50 kg Unit selling price: 200FCFA / kg

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	20000000	20000000	20000000	20000000	20000000	100000000
2) Intermediate consumption	12160000	12160000	12160000	12160000	12160000	60800000
3) Value added (3) = (1) - (2)	7840000	7840000	7840000	7840000	7840000	39200000
4) Charges	4748769	4748769	4748769	4748769	4748769	23743846
5) Gross operating surplus (5) = (3) - (4)	3091231	3091231	3091231	3091231	3091231	15456154
6) Financial expenses and amortization	1667200	1667200	1667200	1667200	1667200	8336000
7) Net Result Accounting (7) = (5) - (6)	1424031	1424031	1424031	1424031	1424031	7120154
8) Net Cash Flow (8) = (7) + Depreciation	2904031	2904031	2904031	2904031	2904031	14520154
9) Accumulated net cash flow	2904031	5808062	8712092	11616123	14520154	14520154

Source: Consultant estimates based on information collected

4.5.7. Stabilized lafoun production using a microbial starter for Nigerian market

Lafoun is traditionally produced by soaking peeled tubers for 24 hours and drying in the sun for 4-5 days. During drying, cassava is exposed to several contamination factors, affecting the microbiological and sanitary physical quality (presence of sand grains) of the product. The lack of control of the fermentation and drying parameters means that from one production to another the quality of the product varies.

The use of microbial choke, coupled with the use of appropriate methods of drying allows to have a high yield in Lafoun, a stabilization of the



physicochemical and organoleptic characteristics and facilitates the control and the optimization of the fermentation. Such technology implemented through the installation of a medium-scale processing unit will allow any young person wishing to invest in agribusiness to offer on the market a traditional product much in demand presented in a modern form with a superior quality meeting sanitary standards and regulatory requirements. The boxes

below present the technical and economic requirements of this agribusiness opportunity.

Box 12: Technical analysis of a stabilized Lafoun production unit

To professionally perform this service, the promoter of a stabilized Lafoun production company must have good aptitude in business management, marketing and communication. Given the technical requirements related to this business, it is preferable that the promoter has a background in food technology, preferably holding a degree in Food Science and Agricultural Technologies level BAC + 3 or higher. In addition to the skills necessary to produce cassava flour, he will have to master the conduct of a fermentation. Failing this, he may associate or recruit a technician specializing in agri-food processing (DEAT level) to monitor processing operations. Depending on the size of the unit, it will also be possible to use manpower specifically for packaging and handling activities. Particular attention should be paid to the conservation of starters after use.

The establishment of its stabilized Lafoun production unit requires the acquisition of a mill, a hydraulic press, a fermentation tank, a pH meter, a dryer (solar, cabinet or flash), balance, sewing machine and construction of the building to house the equipment, a storage shop. It is advisable to compartmentalize the transformation room so as to separate the wet section from the dry section. To practice this service professionally, he will also have to reinforce these capacities notably in business management, marketing and communication.

Box 13: Economic analysis Technical analysis of a stabilized Lafoun production unit

The establishment of a Lafoun production unit requires an initial investment estimated at 8,700,000 FCFA for the purchase of equipment, the construction of buildings and related infrastructure (reception and peeling area) and to constitute a fund rolling stock (BFR). The structure of the five-year operating account is as follows

Basic assumptions:

Quantity of fresh cassava to be processed: 400 kg / day

Yield: 25%

Average annual production: 20t / year is 20000 plastic bags of 1 kg

Unit selling price: 700FCFA / kg

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	14000000	14000000	14000000	14000000	14000000	70000000
2) Intermediate consumption	5452500	5452500	5452500	5452500	5452500	27262500
3) Value added (3) = (1) - (2)	8547500	8547500	8547500	8547500	8547500	42737500
4) Charges	5733000	5733000	5733000	5733000	5733000	28665000
5) Gross operating surplus (5) = (3) - (4)	2814500	2814500	2814500	2814500	2814500	14072500
6) Financial expenses and amortization	1750960	1750960	1750960	1750960	1750960	8754800
7) Net Result Accounting (7) = (5) - (6)	1063540	1063540	1063540	1063540	1063540	5317700
8) Net Cash Flow (8) = (7) + Depreciation	2633540	2633540	2633540	2633540	2633540	13167700
9) Accumulated net cash flow	2633540	5267080	7900620	10534160	13167700	13167700

4.5.8. Production of quality pineapple planting materials

The quality and productivity of pineapple are directly influenced by the quality of the rejection



Source - <http://www.arbofruits.nc/nos-activites/nos-actions-en-province-nord/l->

(type of rejection, size, variety, purity). In order to meet the requirements of destination markets for pineapples, particularly the European market, there is a need to improve the discharges used. There is still no specialized unit in the production and marketing of discards and especially discards for organic pineapple. In addition, there are research results including, but not limited to, the performance of discard types, market-preferred varieties, and rapid release multiplication methods that are elements to be capitalized by recent graduates to exploit this potential. It will therefore be

for youths to create a company specializing in the production and marketing of waste.

The economic analysis reveals that the installation of a pineapple rejection production unit requires an initial investment of 6,000,000 FCFA. The activity is profitable already from the first year with a net profit of 807 500 FCFA and which passes to 3537500 FCFA during the third year. The technical analysis is presented in Box 14 and the operating account is presented in Box 15.

Box 15: Economic Analysis of a Production Unit of Organic Pineapple Planting material

Young people wishing to set up to produce pineapple discards must use external funding in the first year of activity to implement the activities. In fact, there will be no cash inflow in the first year, given that the planting material and pineapple fruits can only be harvested in the second year. The initial charges are mainly related to land leasing, input supply and labor. For daily operation, they will also need working capital. Estimates were made on 1 ha for the first year, 2 ha for years 3 and 4 and 3 ha for the fifth year. Two products namely discard and fruits are considered in the formation of the turnover. The cost structure of producing and marketing planting material in the first five years of operation may be as follows:

Operating account						
Wording	Year					Total
	1	2	3	4	5	
1) Turnover	0	6125000	9750000	9750000	12250000	37875000
2) Intermediate consumption	1650000	2150000	2800000	2600000	3350000	12550000
3) Value added (3) = (1) - (2)	-	3975000	6950000	7150000	8900000	25325000
	1650000					
4) Charges	1400000	1700000	1900000	1900000	2050000	8950000
5) Gross operating surplus (5) = (3) - (4)	-	2275000	5050000	5250000	6850000	16375000
	3050000					
6) Financial expenses and amortization	1467500	1467500	1467500	1467500	1467500	7337500
7) Net Result Accounting (7) = (5) - (6)	1080000	1080000	1080000	1080000	1080000	5400000
8) Net Cash Flow (8) = (7) + Depreciation	387500	387500	387500	387500	387500	487500
9) Accumulated net cash flow						
Wording	-	807500	3582500	3782500	5382500	9037500
	4517500					
	-	1195000	3970000	4170000	5770000	10975000
	4130000					
1) Turnover	-	-	-472300	3697700	9467700	
	5637300	4442300				

Source : Consultant estimates based on information collected

Box 14: Technical analysis of a biological pineapple planting material production unit

The production of planting material, like all planting material, is very sensitive and requires good technicality and special attention. To do this, young people interested in the creation of a production and marketing of the planting material must be specialized in crop production with a minimum level of basic concepts in production techniques and multiplication of rapid rejections by the fragmentation method. Stems, storage and preservation of planting material. In addition, the creation and management of a business requires managerial and leadership skills. Thus, young people will have to strengthen their capacities in the elaboration and implementation of business plans, in business management, in marketing and communication strategies. These capacity enhancements will enable them to better position their product on the market and optimize their profit.

Like seed production, young people need to be familiar with the technical regulations of production and the process of certification of planting material. In addition, to be recognized as producers of certified planting material, they must register with the Quality Promotion and Product Packaging Service (SPQC) to obtain their professional card. The technique of rapid production of stem fragmentation is the most appropriate as the promoters will harvest the pineapple fruit. It will be a question of selecting the plants which gave the big fruits, to harvest their stump (stem). Then, it will be necessary to cut the stems in the direction of the length, so as to obtain several fragments (fragments of 3 to 4 cm for example) and proceed to the nursery in tanks above ground before proceeding later with the transplantation.

4.5.9. Aquaculture Engineering

Aquaculture engineering helps aqua culturists in the definition and implementation of their aquaculture production projects by providing them with the necessary expertise to:

- carry out technical and economic feasibility studies for aquaculture projects;
- sizing aquaculture projects for the realization of a specific production;
- arrange breeding units to determine the area needed for a given project.

As it stands, the Aquaculture Engineering Department does not exist at national level. It will therefore be for youths who have the appropriate technical skills and aptitudes to seize this opportunity to offer their services spontaneously in areas with high aquaculture production or with strong potential for aquaculture. Obviously, the demand exists but the techniques currently used are still in the informal and are not professional and appropriate. The boxes below present the technical and economic requirements of this agribusiness opportunity.



Box 16: Technical Analysis for an Aquaculture Engineering Company

From a technical point of view, the Aquaculture Engineering Department requires some basic technical skills. Indeed, the young person wishing to seize this opportunity should have a minimum university level (at least BAC + 3 in animal production, civil engineering or aquaculture engineering) and have basic concepts in aquaculture production techniques. To perform this service in a professional way, it will also have to strengthen these capacities in particular in: project development and management, business management, conduct of technical-economic studies for aquaculture projects, sizing and construction of ponds and strategies marketing and communication. These technical skills will not only enable him to highlight and understand the various constraints (technical, socio-economic and environmental) related to the choice of aquaculture farming systems but also to study the physical, chemical and biological parameters determining the Establishment of an aquaculture project and the bases of civil engineering and engineering necessary for the realization and management of these farming systems. Ideally, it would be interesting for several young people of varying skills (about three young people including 1 Animal Production Specialist, 1 Civil Engineering Specialist and 1 Project Management Specialist) to partner to offer this package of services to the target group. In all cases, the company must have an authorization / approval that formalizes its activities.

Apart from technical competence, aquaculture engineering requires the use of adequate equipment that can develop aquaculture projects (computers, printers and other necessary IT tools, etc.), size and carry out aquaculture infrastructures (measuring instruments, materials and equipment). tools needed to dig ponds or build ponds above ground etc)

Box 17: Economic Analysis for Aquaculture Engineering

Considered a service, aquaculture engineering is a service for aquaculturists at the national level whose cost of remuneration depends on the size of the aquaculture service / project. However, young people wishing to seize this opportunity will have to face an initial investment composed mainly of the cost of acquisition or rental of equipment, the rental or construction of the place in which the company has been located, registration fees / formalization and a working capital requirement. The structure of the three-year operating account can be as follows:

Forecast operating account

Wording	Year			Total
	1	2	3	
1) Turnover	4 400 000	9 600 000	14 400 000	28 400 000
2) Intermediate consumption	770 000	960 000	960 000	2 690 000
3) Value added (3) = (1) - (2)	3 630 000	8 640 000	13 440 000	25 710 000
4) Charges	5 150 000	4 900 000	5 620 000	15 670 000
5) Gross operating surplus (5) = (3) - (4)	- 1 520 000	3 740 000	7 820 000	10 040 000
6) Financial expenses and amortization	1 896 667	1 896 667	1 896 667	5 690 000
7) Net Result Accounting (7) = (5) - (6)	- 3 416 667	1 843 333	5 923 333	4 350 000
8) Net Cash Flow (8) = (7) + Depreciation	- 2 000 000	3 260 000	7 340 000	8 600 000
9) Accumulated net cash flow	- 2 000 000	1 260 000	8 600 000	-

Source: Consultant estimates based on information collected

En somme, le génie aquacole est une opportunité qui serait rentable aux jeunes déjà à partir de la deuxième année où le résultat net comptable et le cash-flow net deviennent positifs ; soit respectivement 1 843 333 et 3 260 000fcfa.

4.5.10. Production of maggots

According to the study on the fish industry, the actors are confronted with the unavailability of quality local foods. Good nutrition is the key to any breeding system. Protein and vitamins are essential for good fish growth.

Thus, live prey are highly sought after by fish farmers. The creation of a company producing maggots, larvae and termites is therefore an opportunity that youths can seize to make agribusiness. It is difficult

to do a financial analysis because there are no studies on the amount of maggots, larvae produced under given conditions.

The production of live prey is practiced in some structures of the country only in association with other productions such as chicken farming and fish farming. The boxes below present the technical requirements of this agribusiness opportunity.



Box 18: Technical analysis for a maggot and earthworm production unit

The creation of a live prey production company can be set up by any young person with a minimum university level (BAC + 3 level in animal production or plant production). However, the young person trained in maggot and / or larval production techniques can start such production. In this area, it is important for the youth to understand the role of each input and the process of waste degradation to improve and improve production. The following table shows the equipment needed to produce different live prey and their production duration.

Type of production	Necessary equipment	Production time
maggots	Blood and animal offal; cow dung, big pots or big barrels, water, buckets,	5 to 10 days
	Bottles or small bowls	6 days
termites	According to Songhai's method: dead animals, fresh grains, household waste, animal waste (cow dung, manure, quail waste), buckets and bottles or small bowls of packaging	1 day
Worms (vermicomposting)	Large barrels (capacity of 10 liters), Cow dung, Straw, Water	30-90 days

4.5.11. Freshwater shrimp production

Studies in Benin have shown that shrimp fishing is a financially and economically profitable activity for all the actors involved (fishermen, processors and traders). But in times of flood, fishermen have trouble meeting shrimp demand. According to Gangbe et al. (2016), the species *Macrobrachium vollenhovenii* locally called "Chacha" in local languages Fon and Goun or "Achochi" or "Bolou" in local language Minan knows, every year, a strong seasonal exploitation (July to December) in Benin. But shrimp farming in freshwater is not practiced in Benin. The production cycle is not yet mastered. The Laboratory of Hydrobiology and Aquaculture of the Faculty of Agronomic Sciences is currently carrying out studies on the domestication of shrimp (*Macrobrachium vollenhovenii*) as part of the ProCAD project. The production of freshwater shrimp aimed at marketing finished products in the period from July to December would be an opportunity for youths. But this opportunity would be grasped once the development cycle of the species and rearing conditions are known, ie after the publication of the results of the current project.



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Box 19: Technical Analysis for a Freshwater Shrimp Farm

The establishment of a freshwater shrimp production company will only be possible if it is carried out by a young person with a minimum level of education (level BAC + 3) in halieutic production. The latter will have to get closer to the Laboratory of Hydrobiology and Aquaculture for more information on the conditions and techniques of shrimp production in Benin. Moreover, the document by Griessinger et al. (1991) can help them to write the economic part of a project in this field. Based on this document, it should be noted that such an enterprise will need to build fish ponds or ponds and to possess hydraulic equipment, a generator, fertilizers, adapted food. Finished products may be packaged in cartons and polystyrene.

4.5.12. Plant Clinic



Source :

<https://cabiplantwise.files.wordpress.com/2013/09/mbee-re-sub-county-shdp-clinics-launch-c-rose-kamau.jpg>

Every agricultural campaign, producers deplore parasitic attacks and pests of all kinds. These pests affect producers' production and income. In most cases, producers remain helpless in the face of pest attacks or provide answers that are desirable for their efficiency. In addition, with the restructuring of management services that somehow provided advice to producers, there is a void that requires skills in pest management. To do this, the creation of a service company in plant protection is an opportunity to seize. The proposed service must be accessible by producers either through toll-free numbers or the creation of

mobile platforms.

The company will take care of:

- Conduct diagnoses for both preventive and curative purposes;
- Develop a phytosanitary protection plan for farms;
- Support farm operations in the selection of pest management measures, the appropriate choice of pesticides;
- Advise producers on soil fertility management (plant and soil analysis and recommendation of fertilization programs);
- Accompany farms to comply with maximum residue limit requirements in products.

The economic analysis reveals that the creation of a plant clinic service delivery unit requires an initial investment of 5522500FCFA. The activity would be profitable from the second year with a net accounting result of 935 950 FCFA which passes to 1935950 FCFA the third year. The technical analysis is presented in Box 20 and the operating account is presented in Box 21.

Box 20: Technical Analysis of a Plant Clinic

The plant clinician must be a specialist in plant production with the minimum level of license. This activity requires a good knowledge of the crop's technical itineraries, and the inputs used in plant production. Excellent theoretical and practical knowledge in entomology, phytopathology and soil fertility is essential.

To better manage the company, the plant clinician must be strengthened in the development and implementation of business plan, business management, plant production techniques, standards and regulations for the use of phytosanitary products, e marketing and communication strategies.

There are resources such as CABI-plant Wise (<https://www.plantwise.org/plant-clinics/>) that can be used for diagnostics and recommendations. In addition, for capacity building in pest management, the clinician may use training modules developed by CABI called Plant doctor training (<https://www.plantwise.org/plant-clinics/plant-doctor-training/>).

Given the complexity of the plant clinic, it is best that two to three young people come together to create the service delivery business. To carry out this activity, the promoters must have, among other things, computers and printer, rolling stock (motorcycle for frequent trips in the field), a room to be used as an office and small laboratory equipment (magnifying glass, kits, etc.) to take samples and make diagnoses.

Box 21: Economic Analysis of a Plant Clinic

Young people eager to seize to offer theirs as a plant clinician will face an initial investment consisting mainly of office rental, motorcycle purchase, office furniture, computer equipment (computer, printer). Apart from the initial costs related to the acquisition of computer equipment and rolling stock, this activity does not require heavy equipment and young people could start without resorting to external financing. The cost structure for the provision of clinical plant services over the first five years can be as follows:

Operating account

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	2000000	6000000	7000000	10000000	12000000	37000000
2) Intermediate consumption	662500	1020000	1020000	1020000	1070000	4792500
3) Value added (3) = (1) - (2)	1337500	4980000	5980000	8980000	10930000	32207500
4) Charges						
5) Gross operating surplus (5) = (3) - (4)	-1612500	1930000	2930000	5930000	7830000	17007500
6) Financial expenses and amortization	1415050	1415050	1415050	1415050	1165050	6825250
7) Net Result Accounting (7) = (5) - (6)	-3027550	514950	1514950	4514950	6664950	10182250
8) Net Cash Flow (8) = (7) + Depreciation	-2606550	935950	1935950	4935950	6835950	12037250
9) Accumulated net cash flow	-2606550	-1670600	265350	5201300	12037250	

Source: Consultant estimates based on information collected

4.5.13. Repackaging and marketing of agricultural inputs in small volume packages

This activity of repackaging and sale of agricultural inputs including fertilizers already exists but is done informally. In low landlocked areas where the area planted is relatively small, producers sometimes help each other by selling part of their agricultural inputs that would not have been used for production. Indeed, most producers often do not need to buy the entire 50 kg fertilizer bag or bag / sack etc. to ensure their production. This is an opportunity for agribusiness that youths can seize by adapting the supply of agricultural inputs to the needs of producers. The boxes below present the technical and economic requirements of this agribusiness opportunity.

Box 22: Technical Analysis of a Farm Reconditioning Firm

To succeed in conducting this activity professionally, young people must have some basic technical skills. It must have a minimum university level (at least BAC + 3 in rural economics and sociology or in plant production) and have basic notions in storage techniques and conservation of agricultural inputs. Moreover, it will have to reinforce its capacities notably in: management of enterprise, doses of inputs by speculation, storage and conditioning, stock management and marketing and communication strategies. Since repackaging and marketing are concerned with agricultural inputs, controlling the standards and regulations in force on these inputs becomes an obligation. In terms of regulations, for example, Regulation No. 03/2009 / CM / UEMOA harmonizing the rules governing quality control, certification and marketing of plant seeds and seedlings in WAEMU; Regulation No. 04/2009 / CM / UEMOA on the harmonization of the rules governing the approval, marketing and control of pesticides within WAEMU. These technical skills will have to allow him to make a market study in order to identify the real needs of the producers to propose the types of inputs in adequate quality and quantity. Although this is not as necessary as the case of aquaculture engineering, it would be interesting for several young people of varied skills (two young people, including 1 Specialist in crop production and 1 specialist in rural socio-economics) to join forces to lead this activity. Creating a company with these sales shops throughout the national territory.

This agribusiness opportunity requires the use of equipment, particularly for the repackaging of inputs. Depending on the results of the market study and the desired level of industrialization, it will be necessary to acquire a repackaging line to be effective. It will also be necessary to purchase the bags or sachets for the packaging of the inputs on which the information relating to the capacity (weight / quantity, type of input, dose, etc.) and to the company should be included. Computer and office tools / equipment will also be used to properly carry out the activity. The company must also have an authorization / approval that formalizes its activities.

Box 23: Economic Analysis of a Farm Reconditioning Firm

Young people eager to seize this agribusiness opportunity of repackaging and selling agricultural inputs will face an initial investment consisting mainly of the cost of acquiring the equipment, renting or building the site to house the farm. company and its sales shops, registration / formalization fees and a working capital requirement. This activity also requires a relatively large financial mobilization especially for the acquisition of the raw material (fertilizers and other inputs) which will be repackaged and sold. Recourse to financial institutions may then be necessary. The cost structure for the five-year NPK chemical fertilizer purchase and repackaging activity can be as follows:

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	35 750 000	78 000 000	117 000 000	162 240 000	162 240 000	555 230 000
2) Intermediate consumption	31 130 000	67 200 000	100 440 000	133 440 000	133 440 000	465 650 000
3) Value added (3) = (1) - (2)	4 620 000	10 800 000	16 560 000	28 800 000	28 800 000	89 580 000
4) Charges	5 450 000	5 500 000	5 980 000	5 980 000	5 980 000	22 690 000
5) Gross operating surplus (5) = (3) - (4)	- 830 000	5 300 000	10 580 000	22 820 000	22 820 000	66 890 000
6) Financial expenses and amortization	2 145 000	2 145 000	2 145 000	2 145 000	2 145 000	10 725 000
7) Net Result Accounting (7) = (5) - (6)	- 2 975 000	3 155 000	8 435 000	20 675 000	20 675 000	56 165 000
8) Net Cash Flow (8) = (7) + Depreciation	- 1 550 000	4 580 000	9 860 000	22 100 000	22 100 000	63 290 000
9) Accumulated net cash flow	- 1 550 000	3 030 000	12 890 000	34 990 000	57 090 000	120 380 000

Source: Consultant estimates based on information collected

In short, this agribusiness opportunity can be very profitable from the second year for young people with the appropriate technical and financial support.

5

APPROACH FOR YOUNG GRADUATE INTEGRATION IN MAJOR AVC

Service Test4Ag Start Up Testing and validation of Agribusiness Start Up ideas

Service Eval4Agri StartUp Evaluation of agribusiness Start Up projects

Service Form4Agri StartUp Training and Capacity Building

Service Fin4Agri StartUp Financing of agribusiness projects

Service Leg4Agri StartUp Formalization of companies in agribusiness

Service Ment4Agri StartUp Young agri bussinessman Mentoring

5. Approach for young graduate integration in major a AVC

The approach of integrating young university graduates into agricultural value chains is based on an offer of specialized services for young agribusiness entrepreneurs. These services will cover the assistance and support needs of the agribusiness idea holders from the business idea to its realization.

Service Test4Ag StartUp **Testing and validation of Agribusiness Start Up ideas**

Service Eval4Agri StartUp **Evaluation of Start Up projects in agribusiness**

Service Form4Agri StartUp **Training and Capacity Building**

Service Fin4Agri StartUp **Financing of agribusiness projects**

Service Leg4Agri StartUp **Formalization of companies in agribusiness**

Service Ment4Agri StartUp **Young agribusinessman Mentoring**

5.1. Test and Validation Service for Business Ideas in Agribusiness

Any business project starts with the idea stage that is nothing concrete. In agribusiness, a business



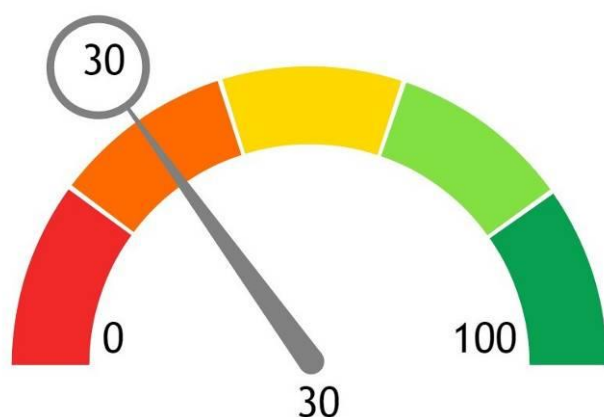
idea can arise from the observation of the agricultural world, the experiences of the wearer in the sector, the know-how or the imagination of the wearer, or a simple competition of circumstance. Whatever its origin, all agribusiness ideas are not destined to flourish. It is then necessary to test business ideas to decide whether it is worth going to the next step. This step is essential in creating d'entreprise agricole. "**Test Agri Start Up**" therefore proposes to accompany young

academics with agribusiness ideas in the test of their idea to limit failures, disappointments and frustrations. The offer of this service can be materialized by the creation upstream of an orientation and counseling center for youths. This counter will function as a carrier organizer and launch pad for agribusiness companies. In this way, he will offer his service not only to test and mature ideas, but also to stimulate new ideas by presenting to the idea bearers and young entrepreneurs the existing opportunities on agricultural value chains. The wicket has several options to achieve its objectives including:

- The development of a "**Test4Ag Start Up**" application to allow youths in a first pre-diagnosis stage to evaluate their own business idea;
- The development of practical agribusiness idea test guides on agricultural support sectors;
- In-depth support on request for ideas having passed the pre-diagnosis stage;
- Schools or academies of agribusiness quarterly in the form of competition.

5.2. Evaluation of agribusiness Start Up projects

For porters who have passed the idea test stage, they move on to the development of the project.



Once again, not all agribusiness projects can prosper. It is therefore necessary to put the projects through a grid. The specialized service "Eval4Agri StartUp" can offer young graduates with agribusiness projects an evaluation framework for their project. This service aims to check if the project is realistic and feasible from the dual point of view of the project and its bearer. From the point of view of the project, the "Eval4Agri StartUp" service will analyze the technical and

financial feasibility of the project, the viability of the business model given the opportunities and constraints of the sector, the market trend and the barriers. From the bearer's point of view, the service will analyze the bearer's personality, potential, motivation, skills and personal constraints. This assessment will help identify project gaps and propose solutions for improvements. The UAC Start Up Valley Foundation could offer this service on request and on competition of business plans for young students. In both cases, the Foundation may set up a Study and Validation Committee for Agribusiness Projects (CEV), the number and profile of members will be defined later. On the occasion of the evaluation sessions, the various dossiers submitted will be studied and the bearers listened to. At the end of the sessions, agribusiness projects will be classified in three categories:

- Innovative projects, realistic and realistic
- Project with potential but perfectible
- Project to restructure and rethink

For projects in the last category, carriers will be directed to the Business Idea Test and Validation service to better mature and restructure business ideas. For the first two categories, the bearers will go through a stage of improvement of the projects according to the cases, then oriented towards the services of formation / Capacity building, financing, formalization and mentoring.

5.3. Personality Test Service for Young Entrepreneur



Entrepreneurship, especially farming, is an adventure whose outcome is strongly determined by the personality of the young entrepreneur or project leader. It is clear that not everyone can succeed in business. So to avoid predictable setbacks and unnecessary frustrations, it is very important to assess your personality very early and make a balance of skills, aptitude and attitude. The specialized "TestPers Start Up" service will allow youths to test their personality, their value and their need very early. TestPers StartUp is a psychotechnical test that will evaluate youths:

- **The type of personality:** Does he/she have a strong personality, who does not allow himself to be, or abandons himself to the first difficulty?
- **The level of passion:** Is he/she a young passionate, optimistic and sensitive to everything or just an opportunist?
- **The level of caution:** Is he/she a young person who does not like taking risks? Caution and risk are two sides of the same coin. The Contractor must be able to anticipate risks and observe caution as appropriate;
- **The level of commitment and determination:** Is he/she a young person committed with a total gift of self? It is important to be resolutely committed and ready to pay the price for success in time or energy;
- **The level of sufficiency:** Is he/she a young person who likes to learn and progress? It is important to improve and improve oneself to evolve;
- **The level of sociability:** Is he/she a young person who likes to work in a team or alone? The entrepreneurial adventure is best experienced when the young person is surrounded by a team that wears it. He must be humble, peaceful and conciliatory;
- **Logic and the ability to observe:** Is he/she young person quite thoughtful, calm, rational and observant? Logic, temperance, observation ability are key qualities in anticipating and capturing market opportunities.

TestPers Start Up's results are inputs to the capacity building service.

5.4. Training and Capacity Building Service

Contrary to the common idea that the agricultural sector is not demanding, it is important to note that competence is a key pillar to the creation and development of agribusinesss. Many agribusiness companies fail because of lack of carrier skills although the business idea is excellent and the project is feasible. For the project leaders who have passed the first two stages "Test idea" and "Project evaluation", they can very substantially improve their chances of success in Agribusiness

by offering training and capacity building services on key themes. The UAC Start Up Valley Foundation will therefore be able to offer a specialized "Form4Ag Start Up" service that will identify the specific training and capacity needs of project leaders and offer dedicated training modules. These trainings can cover the following topics:

- Leadership
- Self-confidence
- Business Development
- Corporate Communication Strategy
- Marketing strategy
- Research and management of partnerships
- Networking
- Risk management
- Etc.

Start Up Valley can outsource certain courses and entrust them to specialized training centers depending on the case.

5.5. Financing service for agribusiness projects



Many agribusiness projects have remained unfunded despite their innovation and the proven bankability of their business model. Indeed, the agricultural world is considered by commercial banks as uncertain and too risky. Farmers' testimonials report countless working sessions with financiers that always end up with the same "unfavorable opinion" response. Commercial banks prefer to put credit lines in favor of Micro-

Financing Institutions, which have a system of close monitoring. Unfortunately, the credit schemes offered by these Micro Finance Institutions (MFIs) are also very poorly adapted to the agricultural sector. Agricultural finance or agribusiness a major constraint in agribusiness. To boost the integration of young academics into agricultural value chains, it is important to support youths by offering them an inclusive, alternative financing model adapted to the world of agribusiness. **"Fin4Ag Start Up"** to be offered by the UAC Foundation Start Up Valley can operate on several options:

- An offer of direct financial services. Depending on its capabilities, the Foundation selects and offers support to the best project leaders who have passed the three previous steps: Project idea testing and validation; Project evaluation; Training and capacity building;
- An offer of assistance and / or guarantee to accompany youths to other sources of funding. The Foundation can create a guarantee fund to share the risks with the banks and thus allow the selected young entrepreneurs to benefit directly from the financing of the partner banks;
- Selection and orientation of youths towards alternative sources of funding. The Foundation can, for example, establish partnerships with Crowdfunding funding platforms to position and support young Agribusiness project leaders in the mobilization of funds;
- Preparation of youths to participate in the competitive funds for young entrepreneurs set up by the Foundations like Ashoka, Tony Elumelu, Anzisha, etc.;

- Organization of "Business to Business" fairs / cafés once a year to encourage the meeting between private investors and entrepreneurs with agribusiness projects.

Many agribusiness entrepreneurs are termed occasional or needy entrepreneurs. Indeed, very few are convinced of their idea and give up as soon as funding is slow to come. Others who obtain funding fail because of the personal financial needs and constraints that absorb some of the funding. To limit these situations and ensure the sustainable integration of youths in agricultural value chains, it is recommended that a support fund be set up to support the basic needs of the project leader before funding is obtained and during first months of life of the company.

5.6. Formalization service for agribusiness companies and installation assistance

The majority of agribusiness firms run by youths in Benin operate in the informal sector. Yet the



formalities of business creation have been simplified with the creation of the Single Window of Formalization of Enterprises and the Investment and Export Promotion Agency (APIEx). With these two reforms, it is possible to create and formalize a farming business in 24 hours. To encourage the formalization of agricultural enterprises, the "Leg4Ag Start Up" service can be offered by the Foundation. This service will assist agribusiness

projects that have gone through all the stages until financing. A special partnership can be created between the Foundation and the GUFÉ to facilitate the formalization process for existing agribusiness companies operating in the informal sector.

To support the establishment of start-ups, the Foundation can also facilitate their access to the factor of production including land and capital. For access to land, the Foundation can facilitate, according to its abilities, the installation of selected youths in the agricultural domains under its management, particularly in the agropoles and technopoles at the level of the partner communes. When land becomes a limiting factor, the project leader can benefit from specific training and capacity building on above-ground production. For inputs, materials, equipment and other infrastructure, the Foundation can orient and provide young entrepreneurs with information on suppliers and markets, as well as approximate costs.

5.7. Mentoring service for young farmers



To promote healthy emulation, evolution and close monitoring of young entrepreneurs in agribusiness, it is essential for them to have a benchmark, a guide and a consultant. The "Mentor4Ag Start Up" service can therefore be offered by the UAC Start Up Valley Foundation to support young entrepreneurs in Agribusiness who have completed all the first 5 stages and who are preparing to realize their project idea. The Mentoring service will be supported by the

creation of a community of agribusiness practices with the following objectives:

- mutual aid and networking between young entrepreneurs in agribusiness;
- the sharing of experiences between young entrepreneurs in agribusiness;
- setting up business relationships between young entrepreneurs;
- promoting the spirit of entrepreneurship
etc.

6

CONCLUSION AND RECOMMANDATION



6. Conclusion and recommendation

To induce the rise of Benin agricultural sector, driver of economic growth, the 2016-2021 GAP has set a program for the boosting the sector. This program targets youths and is based on the development of agricultural value chains at identified ADP level throughout the country. To achieve this, one of the fundamental challenges is to support these youths to position themselves on major VCs by considering the business environment (micro, meso and macro environment), market trends and their academic knowledge. The present study tackles this challenge by firstly identifying at ADPs level, the innovative business opportunities along the major AVCs and secondly performing the techno-economic analysis of these opportunities. It was based on the description of major agricultural sectors' potentialities and the analysis of AVCs' operational and economic performances (Strengths, Weaknesses, Opportunities, Threats, trade barriers, market opportunities, etc.). Proposals to support young entrepreneurs have been proposed by the study to reduce the failure rate of young entrepreneurs. These are the result of an analysis of the vision of youths wishing to undertake agriculture and the failures/successes of the various support projects and programs for agricultural enterprises. Thus, this study shows that there are seven (07) highly promising sectors of innovative enterprises (soybean, rice, small livestock, vegetable products, cassava, aquaculture and pineapple) in which twenty-nine (29) AVCs have been identified as major. The analysis of these AVCs' environment reveals on the one hand strengths and opportunities in terms of: (i) market availability, (ii) innovative technologies resulting from research results and (iii) conducive agroecological and socio-economic conditions for the emergence of new innovative companies. On the other hand, this analysis reveals weaknesses and threats to the emergence of AVCs in terms of: (i) internal and external factors of chains dysfunction, (ii) poor organization of the actors and weak synergy along the chains, (iii) difficulties of access to production resources (financial capital in particular), (iv) unbalanced redistribution of added value, and (v) legislation / regulation at national and regional level. In order to help youths, to take advantage of identified strengths and opportunities and mitigate identified weaknesses and threats, twenty-six (26) innovative opportunities, including eighteen (18) sector specific and eight (8) cross-cutting were identified with an average of three (03) per ADP. These opportunities of innovative businesses aim to either (i) promote a new non-existent agricultural product or service, (ii) improve an existing product or service, (iii) increase offering and availability of a product that is not readily available, or available by period, or (iv) improving the buyer and seller relationship. It covers primary, secondary and tertiary sectors of activity with a predominance for the former. Levels of technicality, financing requirements and the values of profitability indicators provided by the techno-economic analysis confirm the possibility for a young graduate to invest in one or other of these opportunities and succeed brilliantly. But this success depends on the youth's determination and empowerment. In addition, a number of factors are essential to the success of these youths. The most important of these factors is youths' access to land. Thus, for an active participation of youths in agricultural sector boosting, an approach based on a set of specialized services dedicated to young agribusiness entrepreneurs is essential to enable young university graduates to integrate agricultural value chains. These services will cover the assistance and support needs of the agribusiness idea holder from the business idea to its realization. Similarly, some bottlenecks urgently need to be lifted to make the business environment conducive to the emergence of young entrepreneurs.

To better impact the youths willing to establish an agribusiness, it is essential to make available to them:

Some guides such as:

- "Making judicious choice of agribusiness opportunity ",
- "Management strategy of agribusiness environment ",
- "Agricultural products markets and positioning strategy",
- " Agribusiness innovation strategy for higher profitability"

Briefs, leaflets or booklets on:

- "Excellent agricultural entrepreneur profile ",
- "Production techniques of innovative agribusiness opportunities",
- " Agricultural Value Chain environment actors ".

Also, to better support youths, backing structures will need guides on " Youth support service packages' operational strategies ".

References

- ACED, 2017a. Opportunités d'affaires pour les jeunes au sein des chaînes de valeur agricoles. Rapport d'étude. Abomey-Calavi, ACED. Disponible à http://www.aced-benin.org/sites/default/files/publications/opportunites_pour_les_jeunes_dans_les_AVC.pdf.
- ACED, 2017b. Analyse des profils des jeunes dans le secteur agricole au Bénin : Les impératifs de capacités. Rapport d'étude. Abomey-Calavi, ACED.
- Agboton M.S., Sewadé P.L., Ayanan M.A.T., 2017. Tackling constraints in soybean value chains through multi-stakeholder innovation platforms in Agricultural Research for Development: an evidence from the Consortium Soy du Bénin. Manuscrit soumis.
- Ahouangninou C.C.A., 2013. Durabilité de la production maraîchère au Sud-Bénin : Un essai de l'approche écosystémique. Thèse de Doctorat Unique. Université d'Abomey-Calavi. 349 p. Disponible à https://agritrop.cirad.fr/572410/1/document_572410.pdf. Consulté le 25/10/2017.
- Arinloye D.D.A.A., 2010. Facteurs déterminant le choix des consommateurs de riz du Bénin. Rapport final, PAFIRICE ; 100 p.
- Arinloye, D.D.A.A., 2013. Governance, marketing and innovations in Beninese pineapple supply chains: a survey of smallholder farmers in South Benin. PhD thesis, Wageningen University, Wageningen, the Netherlands
- Ayedehin V.A., 2016. Caractérisation des techniques d'irrigation et typologie des exploitations maraîchères dans les communes de Covè et Zangnanado au Centre du Bénin. Mémoire de Master, Université d'Abomey-Calavi. 104 p.
- Ayanan M.A.T., Sèwadé P.L., Agboton S. M., 2017. Towards effective soybean seed systems in Benin: Current situation and prospects for production and delivery of good quality seed, Journal of Crop Improvement, DOI: 10.1080/15427528.2017.1304479.
- Banque Mondiale, 2017a. Doing Business, 2017. Disponible à <http://documents.banquemondiale.org/curated/fr/616411478157394364/pdf/109722-WP-DB17-PUBLIC-Benin.pdf>. Consulté le 23/10/2017.
- Banque Mondiale, 2017b. Enabling the Business of Agriculture. Disponible à <http://eba.worldbank.org/~media/WBG/AgriBusiness/Documents/Reports/2017/EBA2017-Report17.pdf>. Consulté le 24/10/2017.
- Baris P., Lagandré D., Gogan A.C., Gandonou M., Afomasse M. (2015). Etude de faisabilité du Projet d'Appui au Développement des Secteurs Protéiniques (PADEFIP), Nogent, Gret, 137 p.
- Coulibaly O., Nouhoheflin T., Aitchédji C.C., Cherry A.J., Adegbola P., 2011. Consumer's perceptions and willingness to pay for organically grown vegetables. International Journal of Vegetable Science, 17 (4): 349-362, doi:10.1080/19315260.2005.563276
- Dossou J., Soulé I. Montcho M., 2006. Analyse économique de la production de purée de tomate à petite échelle au Bénin. Tropicultura 24 (4): 239-246. Disponible à <http://www.tropicultura.org/text/v24n4/239.pdf>. Consulté le 26/10/2017.
- Fadina R., 2016. Développement des IG au Bénin : Analyse des chaînes de valeur de trois potentiels produits. Mémoire de Master. Ecole Supérieure d'Agriculture. 71 pages.
- FAO, 2008. Benin. Country Profile. ftp://ftp.fao.org/FI/DOCUMENT/fcp/fr/FI_CP_BJ.pdf
- FAO, 2014. Youth and development of aquaculture and livestock in Africa. Regional Conference for Africa, twenty-eighth session, Tunis, Tunisia, 24-28 March. Disponible à <http://www.fao.org/docrep/meeting/030/mj632e.pdf>.

- FAO, 2015. Revue du secteur avicole, Bénin. Disponible à <http://www.fao.org/3/a-ai357f.pdf>.
- Fassinou Hotegni, V.N., Lommen, W.J.M., Agbossou, E.K. and Struik, P.C. 2015. Influence of weight and type of planting material on fruit quality and its heterogeneity in pineapple [Pineapple comosus (L.) Merrill]. *Frontiers in Plant Science*, 5:798. doi: 10.3389/fpls.2014.00798.
- Fassinou, H.V.N., Lommen, W.J.M., Van der Vorst, J.G.A.J, Agbossou, E.K. and Struik, P.C., 2012. Analysis of pineapple production systems in Benin. In: Wünsche, J.-N. and Albrigo, L.G. (eds.) *Proceedings of XXVIIIth IHC-IS on citrus, pineapple and other tropical fruits under subtropical conditions*. *Acta Horticulturae* 928, ISHS 2012, pp. 47-58.
- FIDA, 2015. Projet d'appui au développement du maraîchage (PADMAR) Rapport de conception finale. Disponible à <https://operations.ifad.org/documents/654016/59205833-97ba-415d-9728-9669ac62bed0>. Consulté le 23/10/2017.
- Gangbé L., Agadjihouede H., Chikou A., Senouvo P., Mensah G. A., Laleye P., 2016. Biologie et perspectives d'élevage de la crevette géante d'eau douce *Macrobrachium vollehovenii* (Herklots, 1857). *International Journal of Biological and Chemical Sciences*, 10(2) <http://dx.doi.org/10.4314/ijbcs.v10i2.11>
- Griessinger J-M., Lacroix D., Gondouin P. , 1991. L'élevage de la crevette tropicale d'eau douce. Institut français de recherche pour l'exploitation de la mer. 394p
- Hinvi J. C., 2016. Rapport final de l'étude sur les semences au Bénin. GFA Consulting Group. Cotonou, Bénin.
- Honfoga B. G., Kaki R., Adegbedi A.A., Davo A.A. K., 2016. Impact of the business services for farmers' organizations (ESOP) contract farming model on paddy producers' well-being in Dangbo District of Benin. *African Journal of Marketing Management* 8(4): 32-43. DOI: 10.5897/AJMM2016.0506.
- Houndehin J., 2014. Capitalisation des techniques locales de transformation / conservation de la tomate au Bénin. Communication présentée à l'atelier de capitalisation des méthodes locales de transformation / conservation de la tomate au Bénin Disponible à https://agriprofocus.com/upload/post/Prsentation_transf_Tomate.pdf. Consulté le 26/10/2017.
- ICRA, IFDC et JOLISAA, 2011. Quelle place pour l'pineapple biologique du Bénin sur le marché international ? Rapport d'étude.
- INSAE, 2016. Principaux indicateurs sociodémographiques et économiques (RGPH-4, 2013). Disponible à http://www.insae-bj.org/population.html?file=files/publications/RGPH4/Principaux_Indicateurs%2Bprojections_PrefaceRGPH4Bon.pdf.
- INSAE, 2017. Statistiques Agricoles, Benin. Disponible à <http://benin.opendataforafrica.org/emcqbqg/statistiques-agricoles-benin>. Consulté le 24/10/2017.
- LARES (2011), Composition du prix du rice importé et local au Bénin. Note de synthèse, CCR-B, Bohicon ; 10 p.
- MAEP (2011), Stratégie Nationale pour le Développement de la Riceiculture au Bénin (SNDR). Rapport final ; 26 p.
- MAEP-Direction de la Programmation et de la Prospective (2011). Analyse économique des chaînes de valeurs des secteurs poisson et crevette.
- MAEP-Direction de la Programmation et de la Prospective, 2011. Analyse économique des chaînes de valeurs des secteurs poisson et crevette.

- Mongbo R.L., Sodjinou E., Chikou A. et Adjile A, 2014. Evaluation Finale de l'Impact Socio-économique du Projet. Projet de Vulgarisation de l'Aquaculture Continentale en République du Bénin. Direction de la Pêche/MAEP, 92p.
- Ogouvidé T.F. et Sodjinou E., 2008. Fonctionnement et performance du marché du Soy dans la région Centre du Bénin. Rapport technique final. CRA-Centre/INRAB, 23p.
- PAFILAV, 2014. Etude de filière lait. Rapport d'étude. <http://pafilav.com/wp-content/uploads/2015/08/Etude-fili%C3%A8re-Lait.pdf>
- PNUD, 2015a. Renforcement des capacités des maraîchers des communes de Adjohoun, de Bopa, et de Ouaké sur l'amélioration des techniques de production et de réduction des impacts des risques climatiques sur la culture du piment. Rapport d'étude. Cotonou, 61 p.
- PNUD, 2015b. Renforcement des capacités des maraîchers des Communes de Adjohoun, Bopa, Aplahoué, Ouaké, Malanville, Sô-Ava sur la production et l'utilisation de bio pesticides et la gestion intégrée de la fertilité des sols aux fins de l'adaptation aux changements climatiques. Rapport d'étude. Cotonou, 78 p.
- PSDSA/PNIASAN, 2017. Plan Stratégique de Développement du Secteur Agricole (PSDSA): Orientations stratégiques 2025. Plan National d'Investissements Agricoles et de Sécurité Alimentaire et Nutritionnelle PNIASAN 2017 - 2021. Version finale.
- Rurangwa E., van den Berg J., Laleye P.A., van Duijn A.P., Rothuis A., 2014. Mission exploratoire Pêche, Pisciculture et Aquaculture au Bénin. Un quick scan du secteur pour des possibilités d'interventions. IMARES report C072/14 ; LEI report 14-049. Rapport d'étude disponible à <http://edepot.wur.nl/308953.s>
- Rurangwa E., van den Berg J., Laleye P.A., van Duijn A.P., Rothuis A., 2014. Pêche, Pisciculture et Aquaculture au Bénin : Un quick scan du secteur pour des possibilités d'interventions. Mission exploratoire. IMARES report C072/14; LEI report 14-049, 70p.
- Singbo A.G., 2012. Analyzing Efficiency of Vegetable Production in Benin. PhD thesis, Wageningen University, the Netherlands.140p.
- Sodjinou E., 2017. Etude de marché du lapin et de sa viande au Bénin. Rapport final. Appui à la Professionnalisation de la Filière d'Elevage Cunicole au Sud-Bénin (APFECS /FAO), Cotonou, 73p.
- Sodjinou E. et Aboh A.B., 2009. Etude de la Compétitivité des Systèmes Traditionnel et Moderne d'Elevage de la Volaille au Bénin. Rapport technique final, PAPA/INRAB, 41p.
- Totin E., van Mierlo B., Saïdou A., Mongbo R., Agbossou E., Stroosnijder L., Leeuwis C., 2012. Barriers and opportunities for innovation in rice production in the inland valleys of Benin E. NJAS - Wageningen Journal of Life Sciences 60–63:57–66.
- UNCDF, 2015. Youthstart global Inception phase — youth economic opportunity ecosystem analysis. Benin Country Report. UN Capital Development Fund, 56p.
- World Bank, FAO, ILRI, AU-IBAR, 2014. Investing in African Livestock: business opportunities in 2030-2050. Disponible à <http://www.fao.org/docrep/018/al757e/al757e.pdf>.

APPENDIX

Appendix 1. Mission's Terms of Reference

 RENFORCEMENT DES CAPACITES EN LEADERSHIP ET EN TREPRENEURIALES DES JEUNES ETUDIANTS AU BENIN TERMES DE REFERENCES Sélection d'un Cabinet/Bureau d'étude pour la réalisation de l'étude des Opportunités de Création d'Entreprises innovantes dans les Chaînes de Valeurs Agricoles prioritaires au niveau des Pôles de Développement Agricoles (PDA) au Bénin Date limite de soumission des candidatures : 31 Août 2017 Juillet 2017 1. Contexte et justification Le secteur agricole reste prépondérant dans l'économie béninoise et occupe environ 70% de la population active dont environ 64% sont des hommes et 36% sont des	femmes. Le secteur agricole contribue pour près de 35% au PIB et fournit environ 75% des recettes d'exportation et 15% des recettes de l'Etat (INSAE et PAM, 2014¹). Ainsi, au niveau national, le secteur agricole contribue significativement à la croissance économique et sert de locomotive pour les secteurs secondaires et tertiaires en leur fournissant les matières premières indispensables à leur développement. Des efforts sont davantage consentis pour supporter les acteurs agricoles. Ainsi, diverses approches d'interventions, dont l'approche Chaînes de Valeurs (CV), sont adoptées par les services de soutien (projets, programmes) pour renforcer les capacités des acteurs agricoles à mieux produire et à être plus compétitifs. La chaîne de valeur est l'ensemble d'activités économiques interdépendantes (fonctions) ou d'agents économiques (opérateurs) entretenant des liens verticaux dont l'objectif ultime est la mise à disposition d'un produit donné aux consommateurs finaux (GTZ², 2007; Miller et da Silva³, 2007). La promotion des chaînes de valeur vise à établir ou renforcer les liens entre les différents acteurs au sein de la chaîne. Ces liens favorisent entre autres l'approvisionnement en intrants, la garantie de l'accès aux marchés à des prix rémunérateurs et l'accès à des services financiers sans exigence de garantie contraignante (GTZ, 2007; FAO, 2013). Les potentiels des chaînes de valeur agricole restent encore inexploités surtout par les jeunes notamment à cause de la faible attractivité de l'activité agricole et du milieu rural caractérisé comme un milieu à risques. Cependant, le développement des chaînes de valeur, avec les investissements, catalyse l'émergence de petites et moyennes entreprises de production et de prestations de services au niveau des maillons des CV (fournitures d'intrants et d'équipement, maintenance, gestion, logistique, production, commercialisation, etc.) rendant le secteur plus attractif aux jeunes. Ainsi, les jeunes, surtout ceux issus des universités, dotés de capacités techniques et entrepreneuriales, pourront se positionner au niveau des différents maillons ; ce qui va permettre non ¹ Institut National de Statistiques et de l'Analyse Economique (INSAE) et Programme Alimentaire Mondial (PAM), 2014. Analyse Globale de la Vulnérabilité et de la Sécurité Alimentaire (AGVSA). http://www.wfp.org/food-security. ² GTZ, 2007. Manuel de ValueLinks. La Méthodologie de la Promotion de la Chaîne de Valeur Agricole. Disponible sur http://www.valuelinks.org/images/stories/pdf/manual/valuelinks_manual_fr.pdf. ³ Miller, C. et da Silva, C. 2007. Value chain financing in agriculture, Enterprise Development and Microfinance 13(2/3). Practical Action Publishing, Rugby.
seulement de créer des emplois, mais aussi de créer de la richesse et de participer au développement. Ce faisant, le taux élevé de chômage, qui est devenu un cauchemar pour les jeunes, pourra être jugulé. Le gouvernement Béninois, dans son Plan d'Action Gouvernementale (PAG 2016-2021), présenté au peuple béninois et à la communauté internationale le 16 décembre 2016, a identifié 7 pôles pour la redynamisation du secteur agricole (Vallée du Niger ; Alibori Sud-Borgou Nord ; Atacora Ouest ; Borgou Sud-Donga-Collines ; Zou-Couffo ; Plateau ; Ouémé-Atlantique-Mono), des cultures prioritaires telles que le riz, les cultures maraichères, l'ananas, le maïs, l'anacarde et le soja et les productions animales prioritaires telles que le lait, la viande et le poisson. La mise en place d'un tel programme qui vise les jeunes et qui se base sur le développement des chaînes de valeurs des produits agricoles au niveau des pôles identifiés est une initiative salutaire qui participera à coup sûr à la réduction de l'exode rural et du taux de chômage au niveau des jeunes. Pour y parvenir, l'un des défis fondamentaux est d'identifier les opportunités d'agrobusiness dans les maillons des CV prioritaires sur lesquels les jeunes diplômés des universités peuvent s'insérer pour maximiser leur profit tout en apportant des solutions durables à des problèmes de leur communauté. Les expériences en cours, par exemple le Programme d'incubateurs UAC Startup Valley de la Fondation de l'Université d'Abomey-Calavi (FUAC), montrent que les jeunes aspirants à l'entrepreneuriat agricole ont des difficultés d'accès aux données technico-économiques sur les opportunités de création d'entreprises. Il est alors nécessaire de mettre en place une base de données sur les opportunités de création d'entreprises innovantes dans le domaine de l'agrobusiness pour permettre aux aspirants à l'entrepreneuriat agricole de choisir des activités dans des chaînes de valeurs à fort potentiel d'innovation, de rentabilité et de durabilité. Dans ce contexte, l'Université d'Abomey-Calavi (UAC), qui est au service du développement, a obtenu un financement de MasterCard Foundation pour renforcer les capacités entrepreneuriales et de leadership des jeunes universitaires, afin de faire d'eux des créateurs d'emplois et des agents de changement dans leur communauté. Dans cette perspective, la Fondation de l'UAC a déjà négocié des terres (200 hectares)	auprès des Communes afin de construire des agropoles et technopoles qui sont des centres d'agrobusiness aménagés pour accueillir, héberger et encadrer les startup d'agrobusiness. Un répertoire de données technico-économiques faciliterait le choix des produits agricoles à développer dans chaque agropole. Le présent appel à consultation s'inscrit dans cette dimension et vise à identifier les opportunités d'agrobusiness dans les maillons des CV des produits agricoles prioritaires définis dans le PAG dans les sept pôles de développement agricole au Bénin. 2. Objectifs de l'étude L'objectif général de cette étude est de constituer une base d'informations technico-économique dans chacun des sept pôles de développement agricole, tel que défini dans le Programme Agricole du Gouvernement, les opportunités d'Agrobusiness dans les CV prioritaires des produits agricoles, qui du point de vue économique, occupe une place importante. De façon spécifique, il s'agira de : - faire une revue de littérature exhaustive et une analyse critique sur les opportunités de création d'entreprises en Agrobusiness par les jeunes diplômés des universités dans les CV prioritaires au Bénin ; - déterminer les forces, faiblesses, opportunités et menaces de chaque CV agricole prioritaire ; - conduire une analyse technico-économique des opportunités d'Agrobusiness pour les jeunes diplômés des universités le long des chaînes de valeur des produits agricoles prioritaires ; - proposer des approches (bouquet de services en matière d'accompagnement) pour l'intégration des jeunes diplômés universitaires dans les CV prioritaires. 3. Résultats attendus Les résultats attendus de l'étude sont :

- I. une meilleure connaissance des chaînes de valeur prioritaires au niveau de chaque pôle de développement agricole au Bénin. Au niveau de chaque chaîne de valeur prioritaire, les contraintes, les tendances du marché, les barrières commerciales (tarifaires et non tarifaires) et d'autres aspects affectant les performances devront être documentés;
- II. une meilleure connaissance des opportunités en Agrobusiness dans les chaînes de valeur prioritaires au niveau de chaque pôle de développement agricole. Un répertoire des opportunités d'affaires pour les jeunes diplômés par chaîne de valeur prioritaire et par pôle de développement agricole devra être fourni en considérant l'aspect genre ;
- III. une meilleure connaissance du cadre de mise en œuvre des opportunités en Agrobusiness par les jeunes universitaires.
- IV. Une meilleure connaissance des potentialités génératrice de revenus des CV est présentée dans chaque pôle pour aider les jeunes à faire les choix judicieux et les besoins y afférents pour l'entrepreneuriat agricole sont clairement définis.

4. Approche méthodologique

La conduite de l'étude doit se baser sur une approche chaîne de valeurs et être menée de façon participative. Le consultant doit définir une méthodologie en cohérence avec les objectifs et résultats attendus. Cependant, la méthodologie à utiliser devra tenir compte du modèle de mise en œuvre du projet et des aspirations des jeunes bénéficiaires. Le Cabinet/Bureau d'étude devra présenter un rapport de démarrage détaillant la méthodologie à utiliser ainsi que le calendrier d'exécution des travaux avec les périodes de remise des livrables. La méthodologie devra être validée par le comité chargé de la gestion du projet avant le démarrage de l'étude.

5. Responsabilités et tâches du Cabinet/Bureau d'étude

Les tâches majeures à exécuter par le consultant dans le cadre de la présente mission sont :

5

- faire une revue de littérature sur l'état des lieux de la création d'entreprises, le cadre institutionnel et les documents de planification et de faisabilité d'entrepreneuriat agricole dans les CV prioritaires de chacun des pôles de développement agricole selon le PAG ;
- Identifier les Forces et Faiblesses, opportunités et menaces de chaque CV agricole prioritaire ;
- conduire une analyse technico-économique des opportunités d'Agrobusiness dans les CV prioritaires des pôles pour faciliter l'entrepreneuriat agricole des jeunes diplômés des universités;
- présenter les capacités génératrices de revenu des CV prioritaires des différents pôles de développement agricole et proposer les besoins nécessaires à l'entrepreneuriat agricole des jeunes diplômés des universités du Bénin.

Le Cabinet/Bureau d'étude travaillera en étroite collaboration avec l'équipe de coordination du projet, le point focal de l'activité et la Fondation de l'Université d'Abomey-Calavi.

6. Livrables

Le Cabinet/Bureau d'étude devra livrer les produits suivants :

- Un rapport de démarrage précisant la méthodologie à adopter, ainsi qu'un chronogramme clair de l'exécution des activités. Ce rapport doit être soumis au plus tard une semaine (7 jours) après la signature du contrat.
- Un rapport provisoire sur les opportunités en agrobusiness le long des chaînes de valeur prioritaires dans les pôles de développement agricole au Bénin. Ce rapport devra comprendre une section sur la revue de littérature décrivant de façon générale les opportunités en Agrobusiness au Bénin, les critères de choix des CV prioritaires avec les forces, faiblesses, opportunités et menaces de ces CV. Le rapport devra fournir clairement les opportunités en Agrobusiness le long

6

des CV et ce, par pôle de développement agricole et par genre. Le rapport validé sera traduit en anglais par le consultant.

- La présentation des résultats de l'étude au comité de gestion du projet MasterCard ;
- Un rapport final de la mission intégrant les amendements et les contributions des membres comité de gestion du projet et de toute autre personne ressource contactée par le comité de gestion du projet.

7. Profil du Cabinet/Bureau d'étude

Le Cabinet/Bureau d'étude doit justifier des qualifications ci-après :

- Disposer d'une expertise avérée en promotion des chaînes de valeurs agricoles et promotion des Petites et Moyennes Entreprises au Bénin;
- Avoir un Consultant Principal de niveau Master ou d'Ingénieur Agronome (BAC + 5) en Sciences Agronomiques ou Sciences associées (un doctorat en Agrobusiness ou Agroéconomie serait un atout). Il devra justifier d'une expérience d'au moins cinq (05) ans dans la conduite de travaux d'analyse des chaînes de valeurs des produits agricoles attesté par des rapports de consultation et/ou des publications scientifiques ;
- Avoir un agronome spécialisé en production végétale de niveau BAC+4/5 et ayant au moins 3 ans d'expériences ;
- Avoir un agronome spécialisé en production animale/vétérinaire de niveau BAC+4/5 et ayant au moins 3 ans d'expériences ;
- Avoir un agronome spécialisé en nutrition et technologie alimentaire de niveau BAC+4/5 et ayant au moins 3 ans d'expériences ;
- Avoir un expert en entrepreneuriat agricole de niveau BAC+4/5 et ayant au moins 3 ans d'expériences.

7

8. Durée et modalités d'exécution de la mission

La durée prévue pour l'étude est de 45 jours calendaires. Le Cabinet/Bureau d'étude devra établir un programme de travail détaillé, conformément aux prescriptions des présents TDR et des résultats attendus, qui doit décrire clairement la manière dont il compte réaliser l'étude. La méthodologie proposée par le consultant sera exposée et discutée lors d'une séance de cadrage en début de mission avec l'équipe de pilotage mise sur pied pour le suivi de l'étude. Cette méthodologie devra être validée par le comité chargé de gestion du projet avant le démarrage de l'étude.

9. Mode de Sélection

La durée de la mission est de 45 jours calendaires.

10. Dossier de Candidature

Les cabinets/bureaux d'étude consultés doivent fournir un dossier comportant ;

Une offre technique comportant :

- la présentation du cabinet/bureau d'étude ;
- la compréhension de la mission ;
- la méthodologie précisant entre autres informations le mode opératoire, la composition de l'équipe, le rôle de chaque membre de l'équipe, le chronogramme détaillé ;
- les curricula vitae des membres de l'équipe (modèle de CV en annexe) ;
- les copies légalisées des diplômes et attestations des membres de l'équipe ;
- les copies légalisées des attestations de bonne fin d'exécution des missions similaires ;
- les pièces administratives du Cabinet/Bureau d'étude :
 - L'original ou la photocopie légalisée de l'attestation de non faillite datant de moins de trois (3) mois à la date de dépôt des offres et délivrée par un tribunal de première instance ou suivant la législation du pays du candidat (**pièce éliminatoire**) ;
 - Une attestation des IMPOTS en original prouvant que le soumissionnaire a satisfait à ses obligations fiscales dans les trois mois précédant la date de dépôt des offres (**pièce éliminatoire**) ; les soumissionnaires étrangers devront fournir une attestation du pays où ils sont immatriculés ;
 - Une attestation de la Caisse Nationale de Sécurité Sociale (CNSS) en original prouvant que le soumissionnaire est à jour vis-à-vis de la sécurité sociale dans

8

les trois mois précédant la date de dépôt des offres ; (pièce éliminatoire) ; les soumissionnaires étrangers devront fournir une attestation du pays où ils sont immatriculés ;

- Une copie certifiée conforme du registre de commerce ainsi qu'une copie certifiée conforme de son numéro IFU (en original ou en photocopie légalisée dans l'offre originale) (**pièce éliminatoire**) ;
- L'original ou la photocopie légalisée de l'attestation du relevé d'identité bancaire (**pièce non éliminatoire**).

Une offre financière comportant :

- une lettre de soumission financière dont le modèle est annexé aux TDR ;
- un devis quantitatif et estimatif et les modalités de paiement. Le consultant doit prévoir dans le budget trois (3) ateliers : cadrage au démarrage, présentation des résultats provisoires et validation des résultats et du document final.

Cadre de devis quantitatif et estimatif

Désignation	Unité	Quantité	PU	Montant
Honoraires du Consultant Principal	H/J			
Honoraires de l'agronome spécialisé en production végétale	H/J			
Honoraires de l'agronome spécialisé en production animale/vétérinaire	H/J			
Honoraires de l'agronome spécialisé en nutrition et technologie alimentaire	H/J			
Honoraires de l'expert en entrepreneuriat agricole	H/J			
Perdiems du Consultant Principal	Jour			

9

Désignation	Unité	Quantité	PU	Montant
Perdiems de l'agronome spécialisé en production végétale	Jour			
Perdiems de l'agronome spécialisé en production animale/vétérinaire	Jour			
Perdiems de l'agronome spécialisé en nutrition et technologie alimentaire	Jour			
Perdiems de l'expert en entrepreneuriat agricole	Jour			
Organisation des 3 ateliers : cadrage au démarrage, présentation des résultats provisoires et validation des résultats et du document final	Atelier			
Frais de déplacement et de communication	Forfait			
Secrétariat et charges diverses	Forfait			
TOTAL HT				

11. Critères d'évaluation des offres

L'offre technique sera notée sur 70 points suivant les critères ci-après :

- C1 : Expériences du cabinet/bureau d'étude en lien avec la mission : 10 points si 3 missions et plus, 7 points si c'est 2 missions, 3 points si c'est une mission et 0 point si c'est aucune mission ;
- C2 : Pertinence du chronogramme d'exécution de la mission : 5 points si le chronogramme prend en compte toutes les étapes de la méthodologie et le détail

10

indicatif des TDR, 0 point si le chronogramme ne prend pas en compte toutes les étapes de la méthodologie et le délai indicatif des TDR ;

- C3 : Diplôme du Consultant Principal : 5 points si c'est BAC+5 et plus et 0 point si c'est moins de BAC+5 ;
- C4 : Diplôme de l'agronome spécialisé en production végétale : 5 points si c'est BAC+4 et plus et 0 point si c'est moins de BAC+4 ;
- C5 : Diplôme de l'agronome spécialisé en production animale/vétérinaire : 5 points si c'est BAC+4 et plus et 0 point si c'est moins de BAC+4 ;
- C6 : Diplôme de l'agronome spécialisé en nutrition et technologie alimentaire : 5 points si c'est BAC+4 et plus et 0 point si c'est moins de BAC+4 ;
- C7 : Diplôme de l'expert en entrepreneuriat agricole : 5 points si c'est BAC+4 et plus et 0 point si c'est moins de BAC+4 ;
- C8 : Expériences du Consultant Principal : 10 points si c'est 5 ans et plus et 0 point si c'est moins de 5 ans ;
- C9 : Expériences de l'agronome spécialisé en production végétale : 5 points si c'est 3 ans et plus et 0 point si c'est moins de 3 ans ;
- C10 : Expériences de l'agronome spécialisé en production animale/vétérinaire : 5 points si c'est 3 ans et plus et 0 point si c'est moins de 3 ans ;
- C11 : Expériences de l'agronome spécialisé en nutrition et technologie alimentaire : 5 points si c'est 3 ans et plus et 0 point si c'est moins de 3 ans ;
- C12 : Expériences de l'expert en entrepreneuriat agricole : 5 points si c'est 3 ans et plus et 0 point si c'est moins de 3 ans.

Les offres techniques qui vont obtenir une note supérieure ou égale à 55 points seront éligibles pour l'ouverture des offres financières.

L'offre financière ayant le plus petit montant a 30 points. Les notes des autres offres financières seront calculées selon la formule ci-après : $Nf = 30 \times Fm / F$

(F étant le prix de l'offre financière et Fm étant le prix de l'offre financière ayant obtenu les 30 points).

11

Classement final

Pour aboutir la note globale (NG) de chaque offre, on additionne la note obtenue par l'offre technique (NT) et celle obtenue par l'offre financière (NF).

Le cabinet/bureau d'étude ayant obtenu la NG la plus élevée est le gagnant.

L'offre technique en trois exemplaires dont un original emballée dans une enveloppe A et l'offre financière en trois exemplaires dont un original emballée dans une enveloppe B doivent être placées dans une enveloppe C comportant la mention « Sélection d'un Cabinet/Bureau d'étude pour la réalisation de l'Etude des Opportunités de Création d'Entreprises innovantes dans les Chaînes de Valeurs Agricoles prioritaires au niveau des Pôles de Développement Agricoles (PDA) au Bénin : à n'ouvrir qu'en séance ».

Les dossiers doivent être déposés sous pli fermé au Secrétariat de la Fondation de l'Université d'Abomey-Calavi sis en face de CLCAM Abomey-Calavi après la Mairie au plus tard le 31 Août 2017 à 12h.

Renseignements

Les candidats peuvent obtenir des informations supplémentaires en écrivant à secretariat@fondationuac.org ou uacstartupvalley@uacstartupvalley.com

Abomey-Calavi le 10/08/2017

La Direction Exécutive de la Fondation de l'Université d'Abomey-Calavi

12

ANNEXES

13

FORMULAIRE DE CV

1. Poste [un seul candidat par poste] _____

2. Nom du Candidat [indiquer le nom de la société proposant le personnel] _____

3. Nom de l'employé [nom complet] _____

4. Date de naissance _____ Nationalité _____

5. Formation [Indiquer les études universitaires et autres études spécialisées de l'employé ainsi que les noms des institutions fréquentées, les diplômes obtenus et les dates auxquelles ils l'ont été] _____

6. Affiliation à des associations/groupements professionnels _____

7. Autres formations [Indiquer toute autre formation reçue autre que celle déclarée au paragraphe 5 ci-dessus] _____

8. Pays où l'employé a travaillé [Donner la liste des pays où l'employé a travaillé au cours des 10 dernières années] :

14

9. Langues : [Indiquer pour chacune le degré de connaissance : bon, moyen, médiocre pour ce qui est de la langue parlée, lue et écrite]

10. Expérience professionnelle : [En commençant par son poste actuel, donner la liste par ordre chronologique inverse de tous les emplois exercés par l'employé depuis la fin de ses études. Pour chaque emploi (voir le formulaire ci-dessous), donner les dates, le nom de l'employeur et le poste occupé.]

Depuis [année] _____ jusqu'à [année] _____

Employeur : _____

Poste : _____

15

11. Détail des tâches exécutées

[Indiquer toutes les tâches exécutées pour chaque mission]

12. Expérience de l'employé qui illustre le mieux sa compétence

[Donner notamment les informations suivantes qui illustrent au mieux la compétence professionnelle de l'employé pour les tâches mentionnées au point 11]

Nom du projet ou de la mission : _____

Année : _____

Lieu : _____

Principales caractéristiques du projet : _____

Poste : _____

Activités : _____

12 Attestation :

Je, soussigné, certifie, en toute conscience, que les renseignements ci-dessus rendent fidèlement compte de ma situation, de mes qualifications et de mon expérience. J'accepte que toute déclaration volontairement erronée puisse entraîner mon refus, ou ma disqualification si j'ai été retenue. Je confirme que j'ai donné accord à la firme

16

[insérer le nom] afin de proposer ma candidature pour la mission de [insérer l'identification de la mission ou du poste]

Date : _____

[Signature de l'employé et du représentant habilité du Candidat]

Jour/mois/année

ou

Nom du représentant habilité : _____

Joindre une copie certifiée conforme de la pièce d'identité du candidat proposé

17

FORMULAIRE DE SOUMISSION FINANCIERE

Je soussigné, xxxxxxxx agissant en qualité de Directeur Général au nom et pour le compte de xxxxxxxxxxxx dénommé dans ce qui suit « Consultant » domicilié à l'adresse xxxxxxxx, Téléphone : xxxxxxxxxxxx

et en vertu des pouvoirs qui me sont confiés.

Après avoir pris connaissance du dossier de consultation ouverte relative à sélection d'un Cabinet/Bureau d'étude pour la réalisation de l'Etude des Opportunités de Création d'Entreprises innovantes dans les Chaînes de Valeurs Agricoles prioritaires au niveau des Pôles de Développement Agricoles (PDA) au Bénin et notamment les documents ci-après :

- Termes de référence (TDR)
- Modèle de CV
- Formulaire de soumission financière.

En acceptant les conditions et m'engage en tant que bureau d'études, à les exécuter conformément aux prescriptions du dossier de consultation et pour un montant global Hors Taxes montant en lettres (montant en chiffres) F CFA.

Remets revêtu de ma signature la soumission et m'engage si la soumission est acceptée, à réaliser la mission dite dans un délai de quarante cinq (45) jours.

J'accepte de resté lié par ma soumission pendant un délai de quatre vingt dix(90) jours à compter de la date fixée pour le dépôt des offres.

Il est entendu que le marché soit élaboré et signé, la présente soumission acceptée par vous vaut engagement.

Il est entendu que vous pouvez ne retenir aucune des candidatures que vous recevez ou ne donner suite à la présente consultation.

J'accepte que les sommes dues en exécution du contrat objet de la présente soumission, soient payées en Francs CFA et versées au compte n° xxxxxxxxxxxxxxxxxxxx domicilié à xxxxxxxx ouvert au nom de xxxxxxxxxxxx.

18

Sont annexées à la présente soumission toutes les pièces exigées dûment complètes et signées.

En foi de quoi je soumetts et j'appose ma signature.

Fait en un seul original

A xxxxxx, le xxxxxxxxxxxxxxxxxxxx

Le Directeur Général

xxxxxxxxxxxxxxxxxx

19

Appendix 2. Details of the study methodology

2.1. Global approach to the study and clarification of some concepts

This section is devoted to the clarification of some key concepts necessary for the understanding of this report as well as the general framework of the study.

2.1.1. Clarification of some concepts

• *Agricultural development pole*

An agricultural development pole (ADP) is an area with fairly homogeneous characteristics that can allow the establishment or expansion or hatching of AVCs in the sectors. Thus, the implementation of specific programs by sector, participate in a strategy of territorialization of agricultural development to better develop local potential. The seven ADPs defined by the Strategic Plan for Agricultural Sector Development (PSDSA) and related sectors are: ADP1: Niger Valley (rice, market gardening, cattle, sheep, goat, poultry), ADP2: Alibori Sud - Borgou North and Kérou-Kouandé-Péhunco (cotton, maize, sorghum, soy, cattle, sheep, goats and poultry), ADP3: West Atacora (cotton, rice, maize, mango, legumes, cattle, sheep, goats and poultry); ADP4: South Borgou, Donga and Collines (cashew, cotton, maize, rice, cowpea, soybean, peanut, cassava, yam, mango, cattle, sheep, goat and poultry); ADP5: Zou and Couffo (citrus, mango, oil palm, rice, maize, cowpeas, peanuts, small livestock); ADP6: Plateau (oil palm, maize, cassava and rice); and ADP7: Ouémé, Atlantic and Mono (aquaculture, pineapple, rice, market gardening, maize, cassava, oil palm, small livestock).

• *Sector and Value chain*

A pathway can be defined as a system, ie "a set of elements in dynamic interaction, organized according to a goal". It includes various stakeholders (also called agents, operators or participants) engaged in economic production, marketing and consumption activities related to a particular product or group of products.

A value chain refers to the sequence of activities that are required to bring a product or service from the design site to the end consumers, through the different production and delivery phases to end customers with information flows. (Kaplinsky and Morris, 2001, Sodjinou et al., 2011). Unlike value chains, in a chain of values, the actors support each other and each works to improve the competitiveness of the other and especially by aiming for consumer satisfaction (KIT et al., 2006). A die can have one or more value chains.

• *Innovation*

An innovation is an idea, a practice, a process, or an object / product that is perceived as new, for example, by an individual or a household (Rogers, 2003). Innovation involves the deliberate application of information, imagination and initiative to obtain larger or different values of resources, and includes all the processes by which new ideas are generated and converted into useful products.

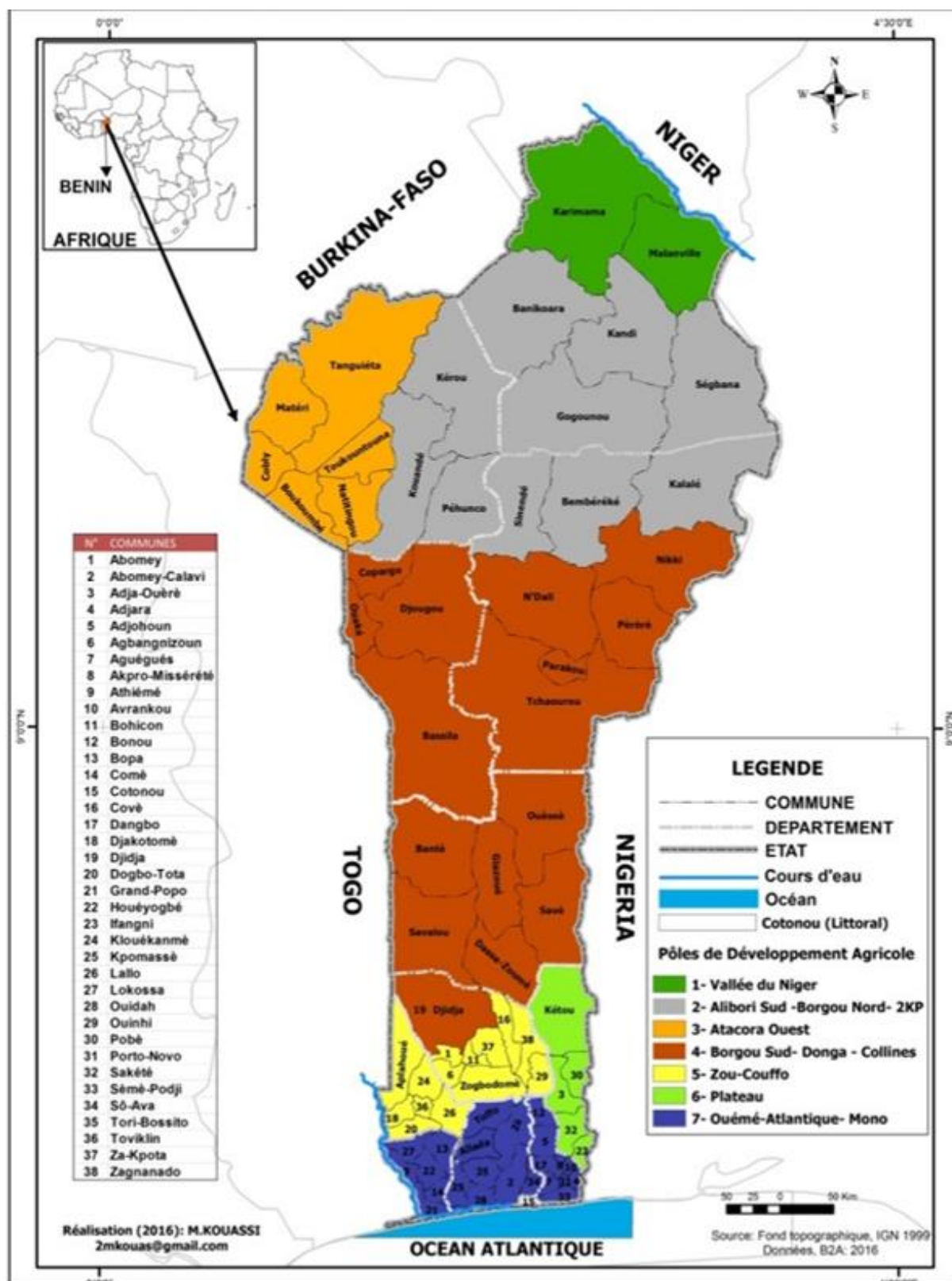


Figure 15. Agricultural Development Pole (ADP)

Source : PSDSA/ PNIASAN (2017)

- **Opportunity**

Larousse defines opportunity as the character of what is opportune. A business opportunity is the encounter between an idea coupled with a socio-economic reality willing to receive the business and a well-defined category of customers who have a problem to solve or a need to satisfy.

- **Innovative company**

In this study an innovative company is one that fulfills one or more of the following characteristics:

- a new / innovative product or service;
- an improvement of a product or service in its substance, its packaging, its manufacturing process, its form of marketing that differentiates it from other existing products or services;
- a product or service that uses a proven search result;
- technological innovation: new technology, incremental innovation (improvement of the existing), process innovation (implementation of a new method for producing or delivering products, etc.);
- a commercial / marketing innovation (new method for marketing: changes in appearance, packaging [innovation on packaging or packaging technology], online sales, new way of selling, use of ICT, bundling, etc.);
- a new financing model (innovative way to mobilize capital for example);
- an organizational innovation (outsourcing of activities).

2.1.2. Overall approach to the study

In a global way, the present mission was conducted following a logical sequence (see Figure 1) marked by a communication and permanent exchanges with the sponsor. Operationally, the mission took place in eight (8) stages: (i) a methodological framing session, (ii) the documentary analysis and secondary data collection, (iii) the elaboration of the data collection tools. (iv) data collection in the field, (v) data analysis, (vi) mid-term restitution, (vii) report writing, and (viii) restitution and finalization of the report.

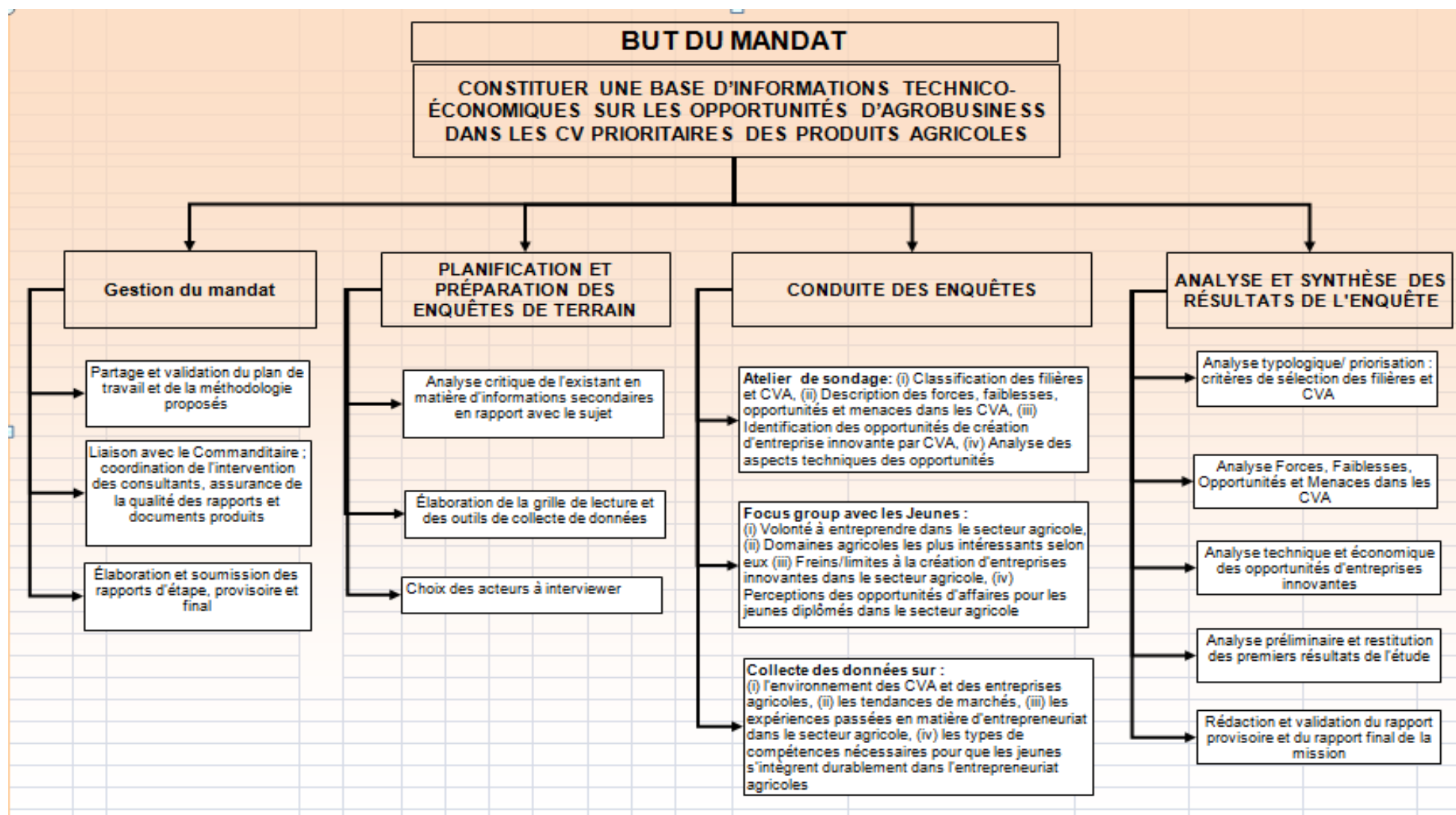


Figure 15. Mission Log Flow Chart

2.1. Organization of the study and data collection

2.1.1. Methodological framing session

At the very beginning of the mission, a scoping session was held at the UAC Foundation level and brought together the sponsor, the consultant and other partners desired by the sponsor. During this session, the consultant presented the operational work methodology and detailed mission timeline. Also, this session allowed the consultant and the sponsor to agree on the practical methods of communication and to remove any points of divergence. The comments and other suggestions of the participants were taken into account for the rest of the mission.

2.1.4. Literature Review and Secondary Data Collection

The review of the literature aimed to summarize the secondary data available on sectors, AVCs, job opportunities, the nomenclature of trades, strengths, weaknesses, opportunities and threats (SWOT), etc. It allowed to have a global view of the different sectors and AVC. The bibliographic analyzes / summaries were made on the basis of the three categories of value chains that the GAP considers, namely: the flagship major sectors, the other major sectors, the non-major sectors. Consideration of this last category is due to the fact that it could potentially offer business creation and job opportunities for youths. The results of this literature review are: (i) provisional mapping of the sectors and AVC; (ii) the strengths, weaknesses, opportunities and threats in the sectors / AVC, (iii) employment opportunities, (iv) a characterization of the sectors / AVCs.

2.1.5. Development of data collection tools

Two types of tools have been developed for this mission, namely, interview guides and survey guides. Two types of interview guides have been developed, the first of which for institutional actors and other development partners [Ministries, Directorates, Technical and Financial Partners (TFPs), town halls, inter-municipal authorities, Non-Governmental Organizations (NGOs), etc.], and the second for focus group interviews with direct AVC actors, young graduates, youths awaiting graduation, youths incubated at the UAC Foundation and young entrepreneurs. The survey guide is simply a form developed to conduct the survey workshops. Survey workshops are types of focus groups that bring together actors from diverse backgrounds and operate mostly in value chains.

2.1.6. Sampling

The study sample is made up of youths (young graduates, youths waiting for graduation, youths incubated at the UAC Foundation and young entrepreneurs), researchers, and actors operating at various levels of AVCs and agricultural sectors. These are mainly macro actors (actors and structures intervening at national level), meso actors (actors and structures intervening at regional level, department, ADP, support structures for AVCs) and micro actors (direct actors of AVCs), business promoters etc.). At the macro level, the actors taken into account are located in the central directorates of the APRM, the umbrella organizations of the OPA (Association Karité Benin (AKB), National Union of Soy Producers (UNPS), Federation of Unions of Producers of Benin (FUPRO-Benin).), National Platform of Peasant Organizations and Agricultural Producers of

Benin (PNOPPA-Benin). At the meso level, the sample includes: public sector executives (DDAEP, etc.), apex leaders at the regional level (URPA Regional Union of Cashew Producers), etc.) and accompanying AVC actors (NGOs, service providers, etc.).

2.1.7. Field data collection

Data collection was done in all Agricultural Development Poles (ADPs) using qualitative methods and quantitative methods. In the first category, the mission held semi-structured individual interviews and semi-structured focus group interviews. For this purpose, the maintenance guides were used. Tools FFOM and SEPO (Successes, Chess, Potentialities, Obstacles) were used to analyze agribusiness opportunities. Quantitative surveys were based on the questionnaire and essentially collected the data needed for techno-economic analysis.

Regarding the survey workshop, the approach followed was participatory and inclusive in the form of group work. The key points covered during these workshops cover: Brainstorming for the listing of the sectors, the prioritization of the sectors according to the criteria defined by consensus, the exhaustive point of AVC by sector, and the identification of opportunities for youths by AVC.

• *A Brainstorming for the listing of sectors*

The participants were invited to make a more or less exhaustive listing of agricultural sectors of ADPs. The exercise was done in the form of brainstorming. Thus, the actors gave a long list of agricultural sectors marked each on cardboard and displayed on flip chart chart.

• *Prioritization of the sectors in view of the actors according to precise criteria*

Following the brainstorming on the sectors, a prioritization exercise was made. As a preamble, the criteria were defined and retained on a consensual basis. These are: (i) the active population mobilized by each sector and (ii) the level of income generated by each sector. Thus the hierarchy was made twice according to each of these criteria. During the course of the exercise, spontaneous or facilitated discussions between the actors made it possible to judge the relative position of each sector. Dispatching was initially done between animal and plant sectors prior to prioritization. Thus each of these two categories have been ranked separately.

• *Comprehensive AVC by sector*

The exhaustive point of AVC by sector followed the prioritization exercises. Each sector taken individually was subjected to a brainstorming exercise for the listing of AVC component. Then an effort of classification in order of importance of each AVC was made before the display of the cartons on the chart flip chart. For the display, a line has been dedicated to each AVC: at the bridgehead the name of the die (red card) followed by the AVC in order of decreasing importance (green boxes). Here too, spontaneous or facilitated discussions between actors allowed us to judge the relative position of each AVC.

• *Identification of opportunities for youths by AVC*

The final step of this workshop was to analyze each sector and VC for the purpose of identifying innovative entrepreneurship opportunities for young agricultural entrepreneurs. In the preamble, the facilitator made a brief clarification of the concepts of opportunity and innovative enterprise. Thus, by analyzing the weaknesses of the sectors / VCs, the missing or very weak links, the results of available research etc., the workshop participants took stock of the innovative agricultural entrepreneurship opportunities for young ADP entrepreneurs.

2.2. Data analysis

At the end of the field phase, the collected data were analyzed and analyzed. The main tools used for the analysis are: content analysis for qualitative data, descriptive analysis (mean, frequency, graph, diagram etc.), typological analysis / prioritization, analysis of strengths, weaknesses, Opportunities and Threats (SWOT), the technical and economic analysis of innovative business opportunities (including the SEPO [Success, Failures, Potentialities and Obstacles] analysis).

2.2.1. Typological analysis / prioritization: selection criteria for the sectors and AVC

In order to retain major value chains, a simple typological analysis (sectors and AVC) was performed using a number of criteria. These criteria were identified through the document review and during the various survey workshops conducted as part of this mission. At the level of the classification of the sectors, the criteria used include (see table 15): (i) the evolution of the average annual production between 2008 and 2016, (ii) the prioritization of the sector by ADP by the actors and by the PSDSA, (iii) the diversity of AVCs within the sector, (iv) the favorable business environment for the sector, (v) the level of organization of the sector, (vi) the availability of the literature to help cross-analyze. Criteria (i), (ii) and (v) indicate the potential for economic growth of the value chains, while criteria (iii) and (iv) reflect the opportunity potential of business / agribusiness in the sector.

For the AVCs, the nine criteria used are shown in Table 16. In this table, Criteria 1, 2 and 5 indicate the potential for economic growth of AVC, Criteria 3, 8 and 9 correspond to likely success of business creation, and 4, 7 and 6 are related to the potential of creating innovative companies.

Based on these different criteria, a AVC prioritization index was calculated and used to retain a number of major AVCs per ADP. In-depth analyzes of innovative business opportunities focused on these major AVCs.

Table 15. Criteria for selection of the sectors at the level of each subsector (PV, PA, P fisheries)

N°	Criteria	Level of measurement
1	Evolution of average annual production between 2008 and 2016	0: unstable growth, 1: more or less stable growth, 2: stable growth, 3: very stable growth.
2	Prioriceation of the sector by the actors in the ADP	0: not a major (not one of the top 3 sectors), 1: ranks 3rd among the major sectors, 2: ranks 2nd among the major sectors, 3: ranks 1st among the major sectors
3	Diversity of AVCs in the sector	0 = unitary die (consisting of 1 AVC); 1 = Low diversification (consisting of 2 to 3 AVC); 2 = fairly diversified sector (consisting of 4 to 5 AVC); 3. Very diversified sector (consisting of more than 5 AVC)
4	Favorable business environment for the sector	0 = Not favorable; 1 = Not very favorable 2 = Quite favorable; 3 = Very favorable
5	Organization of the sector	0 = Not organized; 1 = poorly organized; 2 = Pretty organized; 3 = Very organized
6	The availability of literature to help cross-analyze	0 = Not available; 1 = Not available; 2 = Quite available; 3 = Very available

Table 16. Criteria for choosing AVC by ADP

N°	Criteria	Level of measurement
1	Existence of unmet demand (supply-demand analysis of product) (based on focus group discussions)	0: nonexistence of information, 1: weak2: average 3: high
2	Importance of AVC for ADPs	0: not cited by the actors of the different ADP, 1: AVC cited in a single ADP, 2: AVC cited in 2 ADP, 3: AVC cited in all ADPs
3	Easy integration of youths (low start-up investment compared to income generated)	0 = Not easy; 1 = Not easy; 2 = Pretty easy; 3 = very easy
4	The potential for innovative business opportunities for youths	0 = no opportunities; 1 = an innovative opportunity; 2 = two innovative opportunities; 3 = More than two opportunities
5	Market opportunities	0 = national; 1 = national and regional, 2: national and international, 3: national, regional and international
6	Profitability and economic performance	0 = Not profitable; 1 = Unprofitable; 2 = Quite profitable; 3 = very profitable
7	The availability of literature to help cross-analyze	0 = Not available; 1 = Not available; 2 = Quite available; 3 = Very available
8	Sector monopolized by the state or in the hands of the private sector	0: nonexistent information 1: practically monopolized by the state, 2: partly monopolized by the state, 2: monopolized largely by the private sector
9	Mastery of the technological point of view by the actors even if these technologies are perfectible	0: perfect, 1: partial, 2: weak 3: no control

2.2.2. SWOT analysis

The SWOT analysis was done primarily for the major AVCs selected. The SWOT is usually represented as a 2×2 matrix (see Figure 16) consisting of four parts, the first of which deals with the forces, ie the internal resources or resources dependent on the value chain capacity and are useful for creating innovative businesses. The second part relates to the weaknesses that correspond to the limitation or a default of the AVC and which are harmful for the creation of innovative companies. In the third part of the table, we find the opportunities, that is to say, the external conditions or any other favorable situation in the environment of the AVC and which are useful for the creation of innovative companies. Finally, in the fourth part, we include the threats, that is to say any adverse situation in the AVC environment that will or could prevent the creation of innovative companies.

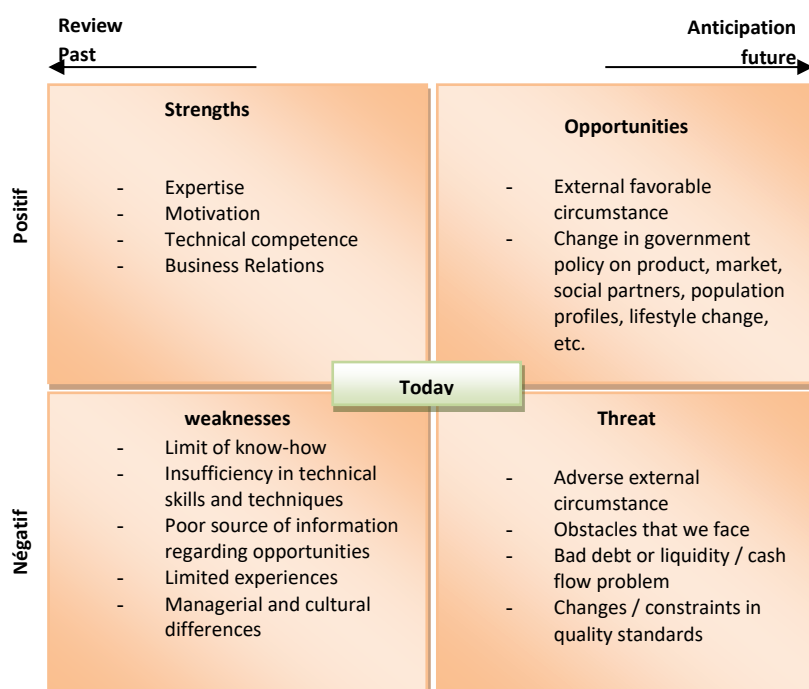


Figure 16. Matrix for analyzing the strengths, weaknesses, opportunities and threats of value chains

Source: Adapted from Schall and Becker (2001)

2.2.3. Technical and economic analysis of innovative business opportunities

On a technical level, the document essentially provides elements that enable young future entrepreneurs not only to make decisions but also to better develop their business plans. The economic analyzes focused on the calculation of costs and value added. The information available in the literature has also been used in the techno-economic analysis. Finally, a SEPO analysis (Success, Failures, Potentialities and Obstacles) was conducted to identify the different opportunities for innovative business creation.

2.3. Restitution and validation of the study report

2.3.1. Mid-term restitution

At the end of the field phase, a report of the first results of the mission was made. On this occasion, the mission also presented, a sketch of the drafting plan of the report of the mission in particular to collect the suggestions of the participants in this debriefing workshop.

2.3.2. Writing of the report

The drafting of the report was done as the mission progressed. It resulted in the draft report of the mission. This report includes a section on the literature review describing generally the opportunities in agribusiness in Benin, the criteria for choosing major AVCs with the strengths, weaknesses, opportunities and threats of these AVCs. The report clearly provides opportunities for agribusiness along AVCs, by agricultural development pole and by gender.

2.3.3. Restitution and finalization of the report

The restitution and finalization phase of the report consisted of presenting the mission's interim report to the sponsors and beneficiaries as well as the actors interviewed. Comments from this workshop will then be taken into account by the consultants to produce the final report of the mission in French. The validated French report will finally be translated into English by Green SA and will be the final product of this mission.

Appendix 3. Details of Financial Calculations for Business Opportunities Analyzed

A. Details of financial calculations for the castrated chick production enterprise

Table 17. Operating account of a castrated chick production enterprise

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	3100000	5550000	7400000	7400000	7400000	30850000
2) Intermediate consumption						
- Transportation consumed	1 116 000	1 674 000	2 232 000	450 000	450 000	5922000
- inputs	250000	250000	250000	100000	100000	950000
- certification	500 000	425 000	550 000	550 000	550 000	2575000
- Other external services (advertising / marketing fees, / market)	350000	350000	200000	200000	200000	1300000
Total	2 216 000	2 699 000	3 232 000	1 300 000	1 300 000	10747000
3) Value added (3) = (1) - (2)	884 000	2 851 000	4 168 000	6 100 000	6 100 000	20103000
4) Charges						
- Staff costs	2640000	2640000	2640000	3000000	3000000	13920000
- Various taxes and duties	0	0	0	0	0	0
- Land rent	2640000	2640000	2640000	3000000	3000000	13920000
Other expenses						
Total	-1 756 000	211 000	1 528 000	3 100 000	3 100 000	6183000
5) Gross operating surplus (5) = (3) - (4)						
- 6) Financial expenses and amortization	215285	215285	215285	215285	215285	1076425
- Financial charges (= i * C)	232 500	232 500	232 500	232 500	262 500	1192500
Amortization	447785	447785	447785	447785	477785	2268925
Total	-2 203 785	-236 785	1 080 215	2 652 215	2 622 215	3914075
7) Net Result Accounting (7) = (5) - (6)	-1 971 285	-4 285	1 312 715	2 884 715	2 884 715	5106575
8) Net Cash Flow (8) = (7) + Depreciation	-1 971 285	-1 975 570	-662 855	2 221 860	5 106 575	2718725

N.B. i = interest rate and C = borrowed capital

Table 18. Depreciation of buildings, installations, equipment and tools production of capon

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Instrument chirurgical	1	8	100 000	100 000	12500
Matériel d'élevage (Mangeoires, abreuvoirs,)	1	5	50 000	50 000	10000
Bâtiment d'élevage	1	20	3 000 000	3 000 000	150000
Matériel agricole (pelles, houe, coupe coupe...)	1	8	50 000	50 000	6250
Achat couveuse	1	5	450000	450000	90000

B. Details of financial calculations for the metis kids business

Table 19. Operating account of a mixed-breed youngster production enterprise

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	2900000	4300000	5700000	7700000	7700000	28300000
2) Intermediate consumption						0
- Transportation consumed	1 100 000	0	0	0	0	1100000
- inputs	150000	50000	50000	50000	50000	350000
- certification	930 000	80 000	85 000	125 000	100 000	1320000
- Other external services (advertising / marketing fees, / market)	350000	350000	250000	250000	250000	1450000
Total	2 530 000	480 000	385 000	425 000	400 000	4220000
3) Value added (3) = (1) - (2)	370 000	3 820 000	5 315 000	7 275 000	7 300 000	24080000
4) Charges						0
- Staff costs	3600000	3600000	4000000	4000000	4500000	19700000
- Various taxes and duties	0	0	0	0	0	0
- Land rent	0					0
Other expenses	3600000	3600000	4000000	4000000	4500000	19700000
Total	-3 230 000	220 000	1 315 000	3 275 000	2 800 000	4380000
5) Gross operating surplus (5) = (3) - (4)						0
- 6) Financial expenses and amortization	141925	141925	141925	141925	141925	709625
- Financial charges (= i * C)	221666,6667	1421666,333	1421666,333	1421666,333	1421666,333	5908332
Amortization	363591,6667	1563591,333	1563591,333	1563591,333	1563591,333	6617957
Total	-3 593 592	-1 343 591	-248 591	1 711 409	1 236 409	-2237957
7) Net Result Accounting (7) = (5) - (6)	-3 371 925	78 075	1 173 075	3 133 075	2 658 075	3670375
8) Net Cash Flow (8) = (7) + Depreciation	-3 371 925	-3 293 850	-2 120 775	1 012 300	3 670 375	-4103875

N.B. i = interest rate and C = borrowed capital

Table 20. Amortization of mixed-race buildings, equipment, materials and tools

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Bâtiment d'élevage	1	15	2 000 000	2 000 000	133333,333
Pâturage artificiel	1	10	800 000	800 000	80000
Matériel d'élevage	1	3	25 000	25 000	8333,33333

C. Details of the financial calculations for the company setting up a vegetable seed production farm.

Table 21. Operating account of a market gardening seed production business

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	2400000	4800000	6000000	6000000	6000000	25200000
2) Intermediate consumption						
Transportation consumed	150000	200000	200000	200000	200000	950000
inputs	320000	450000	450000	450000	450000	2120000
certification	100000	100000	100000	100000	100000	500000
Other external services (advertising / marketing fees, / market)	900000	600000	600000	600000	600000	3300000
Total	1470000	1350000	1350000	1350000	1350000	6870000
3) Value added (3) = (1) - (2)	930000	3450000	4650000	4650000	4650000	18330000
4) Charges						
Staff costs	1200000	1200000	1200000	1200000	1200000	6000000
Various taxes and duties	50000	100000	100000	100000	100000	450000
Land rent	750000	750000	750000	750000	750000	3750000
Other expenses	2000000	2050000	2050000	2050000	2050000	10200000
Total	-1070000	1400000	2600000	2600000	2600000	8130000
5) Gross operating surplus (5) = (3) - (4)						
6) Financial expenses and amortization	984600	984600	984600	984600	984600	4923000
Financial charges (= i * C)	210000	210000	210000	210000	210000	1050000
Amortization	1194600	1194600	1194600	1194600	1194600	5973000
Total	-2264600	205400	1405400	1405400	1405400	2157000
7) Net Result Accounting (7) = (5) - (6)	-2054600	415400	1615400	1615400	1615400	3207000
8) Net Cash Flow (8) = (7) + Depreciation	-2054600	-1639200	-23800	1591600	3207000	

Source : Consultant estimates based on information collected

The production of market garden seeds would be profitable from the second year with a net book profit of 205 400 FCFA which passes to 1 405 400 FCFA in the third year.

Table 22. Depreciation of buildings, plant, equipment and tools of market gardening seeds

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Aire de traitement des semences	1	10	400000	400000	40000
Irrigation	1	10	1500000	1500000	150000
Balance + petits équipement	1	5	100000	100000	20000
Total					210000

D. Details of financial calculations for the company producing and marketing certified soybeans

Table 23. Operating account of a company producing certified soybean seed

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	1500000	3000000	6000000	6000000	6000000	22500000

2) Intermediate consumption	1545000	1300000	1450000	1450000	1500000	7245000
Transportation consumed	150000	200000	250000	250000	300000	1150000
inputs	195000	200000	300000	300000	300000	1295000
certification	100000	100000	100000	100000	100000	500000
Other external services (advertising / marketing fees, / market)	1100000	800000	800000	800000	800000	4300000
Total						
3) Value added (3) = (1) - (2)	-45000	1700000	4550000	4550000	4500000	15255000
4) Charges	1300000	1375000	1310000	1310000	1310000	6605000
Staff costs	1200000	1200000	1200000	1200000	1200000	6000000
Various taxes and duties	50000	100000	100000	100000	100000	450000
Land rent	50000	75000	10000	10000	10000	155000
Other expenses						
Total	-1345000	325000	3240000	3240000	3190000	8650000
5) Gross operating surplus (5) = (3) - (4)						
6) Financial expenses and amortization	1052100	1052100	1052100	1052100	1052100	5260500
Financial charges (= i * C)	260000	260000	260000	260000	260000	1300000
Amortization	1312100	1312100	1312100	1312100	1312100	6560500
Total	-2657100	-987100	1927900	1927900	1877900	2089500
7) Net Result Accounting (7) = (5) - (6)	-2397100	-727100	2187900	2187900	2137900	3389500
8) Net Cash Flow (8) = (7) + Depreciation	-2397100	-3124200	-936300	1251600	3389500	

Table 24. Depreciation of buildings, installations, equipment and tools certified seeds of soya

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)		Amortization (FCFA/year) (5) = (4) / (2)
Aire de séchage	1	10	400000	400000		40000
Installation Irrigation	1	10	1500000	1500000		150000
Balance+petitséquipements	1	5	100000	100000		20000
Magasin	1	20	1000000	1000000		50000
Total						260000

E. Details of financial calculations for a plant clinic

Table 25. Operating Account of a Plant Clinic

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	2000000	6000000	7000000	10000000	12000000	37000000
2) Intermediate consumption						
Transportation consumed	100000	200000	200000	200000	200000	900000
inputs	562500	820000	820000	820000	870000	3892500

certification	662500	1020000	1020000	1020000	1070000	4792500
Other external services (advertising / marketing fees, / market)	1337500	4980000	5980000	8980000	10930000	32207500
Total						
3) Value added (3) = (1) - (2)	2400000	2400000	2400000	2400000	2400000	12000000
4) Charges	50000	100000	100000	100000	100000	450000
Staff costs	500000	550000	550000	550000	600000	2750000
Various taxes and duties	2950000	3050000	3050000	3050000	3100000	15200000
Land rent	-1612500	1930000	2930000	5930000	7830000	17007500
Other expenses						
Total	994050	994050	994050	994050	994050	4970250
5) Gross operating surplus (5) = (3) - (4)	421000	421000	421000	421000	171000	1855000
6) Financial expenses and amortization	1415050	1415050	1415050	1415050	1165050	6825250
Financial charges (= i * C)	-3027550	514950	1514950	4514950	6664950	10182250
Amortization	-2606550	935950	1935950	4935950	6835950	12037250
Total	-2606550	-1670600	265350	5201300	12037250	

Table 26. Depreciation of Buildings, Facilities, Equipment and Tools Plant Clinic

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Ordinateur	2	4	350000	700000	175000
Imprimante	1	4	300000	300000	75000
Moto	2	5	400000	800000	160000
Table	1	10	50000	50000	5000
Chaises	4	10	15000	60000	6000
Total				1910000	421000

F. Details of Financial Calculations for the Aquaculture Engineering Company

Table 27. Operating Account of an Aquaculture Engineering Company

Wording	Year			Total
	1	2	3	
1) Turnover	4 400 000	9 600 000	14 400 000	28 400 000
2) Intermediate consumption				
Transportation consumed	0	0	0	-
inputs	0	0	0	-
certification	0	0	0	-
Other external services (advertising / marketing fees, / market)	770 000	960 000	960 000	2 690 000
Total	770 000	960 000	960 000	2 690 000
3) Value added (3) = (1) - (2)	3 630 000	8 640 000	13 440 000	25 710 000
4) Charges				
Staff costs	3 600 000	3 600 000	4 320 000	11 520 000

Various taxes and duties	50 000	100 000	100 000	250 000
Land rent	1 500 000	1 200 000	1 200 000	3 900 000
Other expenses	5 150 000	4 900 000	5 620 000	15 670 000
Total	- 1 520 000	3 740 000	7 820 000	10 040 000
5) Gross operating surplus (5) = (3) - (4)				
6) Financial expenses and amortization	480000	480000	480000	1 440 000
Financial charges (= i * C)	1 416 667	1 416 667	1 416 667	4 250 000
Amortization	1 896 667	1 896 667	1 896 667	5 690 000
Total	- 3 416 667	1 843 333	5 923 333	4 350 000
7) Net Result Accounting (7) = (5) - (6)	- 2 000 000	3 260 000	7 340 000	8 600 000
8) Net Cash Flow (8) = (7) + Depreciation	- 2 000 000	1 260 000	8 600 000	-

Table 28. Amortization of Buildings, Facilities, Equipment and Tools Aquaculture Engineering

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Ordinateurs	3	4	500 000	1 500 000	375 000
Imprimantes	1	4	300 000	300 000	75 000
Instruments de dimensionnement et de réalisation des étangs	1	3	2 000 000	2 000 000	666 667
Petit matériel	1	1	300 000	300 000	300 000
Total	-	-	-	-	1 416 667

G. Details of Financial Calculations for the Rebuilding and Marketing Farm Inputs (Fertilizer) Firm in Small Volume Packaging

Table 29. Operating Account of a Farm Reconditioning and Marketing Business

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	35 750 000	78 000 000	117 000 000	162 240 000	162 240 000	555 230 000
2) Intermediate consumption						
- Transportation consumed	28 600 000	62 400 000	93 600 000	124 800 000	124 800 000	434 200 000
- inputs	1 430 000	3 120 000	4 680 000	6 240 000	6 240 000	21 710 000
- certification	550 000	960 000	1 200 000	1 440 000	1 440 000	5 590 000
- Other external services (advertising / marketing fees, / market)	550 000	720 000	960 000	960 000	960 000	4 150 000
Total	31 130 000	67 200 000	100 440 000	133 440 000	133 440 000	465 650 000
3) Value added (3) = (1) - (2)	4 620 000	10 800 000	16 560 000	28 800 000	28 800 000	89 580 000
4) Charges						
- Staff costs	2 400 000	2 400 000	2 880 000	2 880 000	2 880 000	13 440 000
- Various taxes and duties	50 000	100 000	100 000	100 000	100 000	250 000
- Land rent	3 000 000	3 000 000	3 000 000	3 000 000	3 000 000	9 000 000
Other expenses	5 450 000	5 500 000	5 980 000	5 980 000	5 980 000	22 690 000
Total	- 830 000	5 300 000	10 580 000	22 820 000	22 820 000	66 890 000
5) Gross operating surplus (5) = (3) - (4)						
- 6) Financial expenses and amortization	720000	720000	720000	720000	720000	3 600 000

- Financial charges (= i * C)	1 425 000	1 425 000	1 425 000	1 425 000	1 425 000	7 125 000
Amortization	2 145 000	2 145 000	2 145 000	2 145 000	2 145 000	10 725 000
Total	- 2 975 000	3 155 000	8 435 000	20 675 000	20 675 000	56 165 000
7) Net Result Accounting (7) = (5) - (6)	- 1 550 000	4 580 000	9 860 000	22 100 000	22 100 000	63 290 000
8) Net Cash Flow (8) = (7) + Depreciation	- 1 550 000	3 030 000	12 890 000	34 990 000	57 090 000	120 380 000

Table 30. Depreciation of buildings, facilities, equipment and tools for repackaging and marketing of agricultural inputs

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Ordinateurs	2	4	500 000	1 000 000	250 000
Imprimantes	1	4	300 000	300 000	75 000
Machine de reconditionnement	1	10	6 000 000	6 000 000	600 000
Petit matériel	1	1	500 000	500 000	500 000
Total					1 425 000

H. Details of the financial calculations for the firm of production of stabilized akui from broken white rice

Table 31. Operating account of a stabilized akui production plant based on broken white rice

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	25000000	25000000	25000000	25000000	25000000	125000000
2) Intermediate consumption						0
Transportation consumed	12000000	12000000	12000000	12000000	12000000	60000000
inputs	300000	300000	300000	300000	300000	1500000
certification	1500000	1500000	1500000	1500000	1500000	7500000
Other external services (advertising / marketing fees, / market)	2312500	2312500	2312500	2312500	2312500	11562500
Total	16112500	16112500	16112500	16112500	16112500	80562500
3) Value added (3) = (1) - (2)	8887500	8887500	8887500	8887500	8887500	44437500
4) Charges						
Staff costs	4800000	4800000	4800000	4800000	4800000	24000000
Various taxes and duties	148000	148000	148000	148000	148000	740000
Land rent	500000	500000	500000	500000	500000	2500000
Other expenses	5448000	5448000	5448000	5448000	5448000	27240000
Total	3439500	3439500	3439500	3439500	3439500	17197500
5) Gross operating surplus (5) = (3) - (4)						
6) Financial expenses and amortization	131040	131040	131040	131040	131040	655200
Financial charges (= i * C)	865000	865000	865000	865000	865000	4325000
Amortization	996040	996040	996040	996040	996040	4980200
Total	2443460	2443460	2443460	2443460	2443460	12217300
7) Net Result Accounting (7) = (5) - (6)	3308460	3308460	3308460	3308460	3308460	16542300
8) Net Cash-Flow (8) = (7) + Depreciation	3308460	6616920	9925380	13233840	16542300	16542300

Table 32. Depreciation of buildings, plant, equipment and machinery for the production of stabilized Aklui from broken rice

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Trieuse	1	5	600000	600000	120000
Décortiqueuse-polisseuse	1	5	1500000	1500000	300000
Balance	2	5	25000	50000	10000
Thermosoudeuse	2	2	50000	100000	50000
Humidimètre	2	2	50000	100000	50000
Petit matériel	1	2	100000	100000	50000
Bâtiment	1	10	2250000	2250000	225000
Aire stockage	1	10	100000	100000	10000
Matériel électrique	1	10	500000	500000	50000
Total investissement				5300000	
Total amortissement					865000
BFR				1000000	

I. Details of the financial calculations for the cassava bread flour production enterprise

Table 33. Operating account of a cassava-based bread flour production enterprise

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	20000000	20000000	20000000	20000000	20000000	100000000
2) Intermediate consumption						
- Transportation consumed	6000000	6000000	6000000	6000000	6000000	30000000
- inputs	150000	150000	150000	150000	150000	750000
- certification	1035000	1035000	1035000	1035000	1035000	5175000
- Other external services (advertising / marketing fees, / market)	4975000	4975000	4975000	4975000	4975000	24875000
Total	12160000	12160000	12160000	12160000	12160000	60800000
3) Value added (3) = (1) - (2)	7840000	7840000	7840000	7840000	7840000	39200000
4) Charges						
- Staff costs	4107692	4107692	4107692	4107692	4107692	20538462
- Various taxes and duties	141077	141077	141077	141077	141077	705385
- Land rent	500000	500000	500000	500000	500000	2500000
Other expenses	4748769	4748769	4748769	4748769	4748769	23743846
Total	3091231	3091231	3091231	3091231	3091231	15456154
5) Gross operating surplus (5) = (3) - (4)						
- 6) Financial expenses and amortization	187200	187200	187200	187200	187200	936000
- Financial charges (= i * C)	1480000	1480000	1480000	1480000	1480000	7400000
Amortization	1667200	1667200	1667200	1667200	1667200	8336000
Total	1424031	1424031	1424031	1424031	1424031	7120154
7) Net Result Accounting (7) = (5) - (6)	2904031	2904031	2904031	2904031	2904031	14520154
8) Net Cash Flow (8) = (7) + Depreciation	2904031	5808062	8712092	11616123	14520154	14520154

Table 34. Depreciation of buildings, facilities, equipment and tools for the production of cassava-based bread flour

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Machine à coudre	2	2	50000	100000	50000
Moulin à disque	1	5	1000000	1000000	200000
Moulin à marteau+ cyclone	1	5	1500000	1500000	300000
Balance	2	5	50000	100000	20000
Presse	1	2	350000	350000	175000
Séchoir armoire	1	5	2000000	2000000	400000
Petit matériel	1	2	100000	100000	50000
Bâtiment	1	10	2250000	2250000	225000
Aire de réception et d'épluchage	1	10	100000	100000	10000
Matériel électrique	1	10	500000	500000	50000
Total investissement				8000000	
Total amortissement					1480000
BFR				1000000	

J. Details of the financial calculations for the stabilized Lafoun production plant using a microbial starter for the Nigerian market

Table 35. Operating account of a stabilized Lafoun production company

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	14000000	14000000	14000000	14000000	14000000	70000000
2) Intermediate consumption						
- Transportation consumed	1200000	1200000	1200000	1200000	1200000	6000000
- inputs	90000	90000	90000	90000	90000	450000
- certification	2500000	2500000	2500000	2500000	2500000	
- Other external services (advertising / marketing fees, / market)	1662500	1662500	1662500	1662500	1662500	8312500
Total	5452500	5452500	5452500	5452500	5452500	27262500
3) Value added (3) = (1) - (2)	8547500	8547500	8547500	8547500	8547500	42737500
4) Charges						
- Staff costs	3300000	3300000	3300000	3300000	3300000	16500000
- Various taxes and duties	133000	133000	133000	133000	133000	665000
- Land rent	2300000	2300000	2300000	2300000	2300000	11500000
Other expenses	5733000	5733000	5733000	5733000	5733000	28665000
Total	2814500	2814500	2814500	2814500	2814500	14072500
5) Gross operating surplus (5) = (3) - (4)						
- 6) Financial expenses and amortization	180960	180960	180960	180960	180960	904800
- Financial charges (= i * C)	1570000	1570000	1570000	1570000	1570000	7850000
Amortization	1750960	1750960	1750960	1750960	1750960	8754800
Total	1063540	1063540	1063540	1063540	1063540	5317700
7) Net Result Accounting (7) = (5) - (6)	2633540	2633540	2633540	2633540	2633540	13167700
8) Net Cash Flow (8) = (7) + Depreciation	2633540	5267080	7900620	10534160	13167700	13167700

Table 36. Depreciation of buildings, installations, equipment and tools Lafoun production stabilized

Designation	Quantity ⁽¹⁾	Life time (year) ⁽²⁾	Unit Price ⁽³⁾	Amount (FCFA) (4) = (1) * (3)	Amortization (FCFA/year) (5) = (4) / (2)
Presse	1	2	350000	350000	175000
bac de fermentation	5	2	100000	500000	250000
Thermo soudeuse	2	2	50000	100000	50000
pH-mètre	2	5	100000	200000	40000
Moulin à marteau+ cyclone	1	5	1500000	1500000	300000
Balance	2	5	50000	100000	20000
Séchoir armoire	1	5	2000000	2000000	400000
Petit matériel de transformation	1	2	100000	100000	50000
Bâtiment	1	10	2250000	2250000	225000
Aire de réception et d'épluchage	1	10	100000	100000	10000
Matériel électrique	1	10	500000	500000	50000
Total investissement				7700000	
Total amortissement					1570000
BFR				1000000	

K. Details of the financial calculations for the company producing quality organic pineapple

Table 37. Operating Account of an Organic Pineapple Release Business

Wording	Year					Total
	1	2	3	4	5	
1) Turnover	0	6125000	9750000	9750000	12250000	37875000
2) Intermediate consumption						
Transportation consumed	100000	350000	450000	600000	650000	2150000
inputs	700000	500000	1000000	500000	1000000	
certification	100000	100000	100000	100000	100000	500000
Other external services (advertising / marketing fees, / market)	750000	1200000	1250000	1400000	1600000	6200000
Total	1650000	2150000	2800000	2600000	3350000	12550000
3) Value added (3) = (1) - (2)	-1650000	3975000	6950000	7150000	8900000	25325000
4) Charges						
Staff costs	1200000	1200000	1200000	1200000	1200000	6000000
Various taxes and duties	50000	100000	100000	100000	100000	450000
Land rent	50000	50000	100000	100000	100000	400000
Other expenses	100000	350000	500000	500000	650000	2100000
Total	1400000	1700000	1900000	1900000	2050000	8950000
5) Gross operating surplus (5) = (3) - (4)	-3050000	2275000	5050000	5250000	6850000	16375000
6) Financial expenses and amortization						
Financial charges (= i * C)	1080000	1080000	1080000	1080000	1080000	5400000
Amortization	387500	387500	387500	387500	387500	4875000
Total	1467500	1467500	1467500	1467500	1467500	7337500
7) Net Result Accounting (7) = (5) - (6)	-4517500	807500	3582500	3782500	5382500	9037500
8) Net Cash Flow (8) = (7) + Depreciation	-4130000	1195000	3970000	4170000	5770000	10975000
9) Accumulated net cash flow	-5637300	-4442300	-472300	3697700	9467700	